

# The Iron Age

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York.

Vol. XXII: No. 11.

New York, Thursday, September 12, 1878.

\$4.50 a Year, Including Postage.  
Single Copies, Ten Cents.

## The Hub Friction Clutch.

The accompanying illustrations show a new form of friction clutch, manufactured by the Hub Friction Clutch Company (Limited), 417 Race street, Philadelphia, Pa. This clutch differs from the clutches in general use in applying the friction to the hub instead of the circumference of the pulley. By this means irregularity of wear is avoided and the hub of the pulley is supported. This clutch can be applied to any pulley or used in place of a coupling for detaching lines of shafting. In size they are made in great variety, from those applicable to pulleys with one inch hubs up to those capable of transmitting 500 or 600 horse-power. Fig. 1 represents a counter shaft and pulleys for driving lathes, screw machines, &c., which require the motion to be reversed quickly or gradually, as the case may be. By varying the motion of the shipper, working it quickly to start light machinery and slowly where heavy machinery is to be started or reversed, the clutch can be made useful for a very wide range of work. Fig. 2 is a "cut-off coupling" used for connecting or disconnecting lines of shafting without stopping the engine or motive power or slackening speed. It can also be used for connecting auxiliary steam engines and water wheels so as to use them independent or connected. It may, in fact, be used in a variety of positions where heavy machinery has to be started and stopped and where it is not desirable to keep long lines of shafting in motion constantly. In Fig. 2 A are the ends of the two shafts, which come together in the center of coupling at A; H is the hub, which is made fast to the end of one of the shafts A; S is the shell, which is made fast to the end of the other shaft A; R is the split steel ring (shown in Fig. 3, a section of the cut-off clutch), which is fitted to the inside of shell and made fast to it and into which the hub H is made to fit loosely. The steel ring is made to clasp the hub by means of a tapering wedge, W, which draws the ring together when the sleeve C is moved forward on the shaft, causing the adjusting screw T in end of lever to press the wedge downward. Figure 4 represents a pulley and clutch, the clutch being applied. The dotted lines show the position of the cone when the clutch is thrown off. Figure 5 represents one of the clutches, shown in Figure 1, without the pulley, and the double cone used for double clutches. Figure 6 represents a section of a clutch suitable for application to a pulley. It will be seen that by forcing down the wedge the friction ring is made to grasp firmly the hub of the pulley.

## An Improved Tuyere.

The numerous delays and annoyances which defective construction of and material for tuyeres cause in the management of blast furnaces, and the variety and number of accidents to which they are liable have led engineers, especially within the last few years, to seek to improve them. We present to our readers in the accompanying illustration a construction, by Messrs. Taws & Hartman, Philadelphia, which has stood the test of two years' actual service and has been found to realize some marked advantages. The material chosen is bronze, the superiority of which, when compared with iron, is proved by its rapidly extending use. The bronze tuyere proper is inserted into the end of a water breast, which is bored out conically to receive it, and does not, therefore, call for any packing. The butt end of the tuyere is turned so that it presents a part of a sphere, and the end of the belly pipe is correspondingly shaped to produce a perfect joint. By a simple arrangement which allows rapid and easy replacement of the tuyere, the movable parts are firmly held together. This is effected, as a glance at the sketch will show, by a knee lever under the elbow, at the longer end of which a detachable weight is hung. The pressure exerted by this weight firmly connects water breast and tuyere on the one hand and belly pipe and tuyere on the other. By this means all bolts are done away with, and the weight need only be removed to allow the different parts to drop apart. When it becomes necessary to replace a tuyere a hook is inserted, and it is readily pulled out. By arranging proper openings at the butt of the tuyere any air entering in the water is trapped and carried off direct by the waste pipe. The discharge pipe is taken off at the top of the tuyere and air prevented from collecting in it. For a short distance outside of it the discharge pipe is elevated, which carries off at once any air or steam bubbles to a higher point outside of the tuyere, thus avoiding danger to it. In order to prevent any water from entering the furnace the water is drawn through the tuyere by suction at the same velocity as if it were forced through. It is claimed that, as by this means the water pressure is brought down below the atmospheric pressure, which is generally smaller than that of the blast in the interior of the furnace, no leakage in consequence of cracks can take place. It was found also by experiment that drawing the water through the tuyere prevents any accumulation of air or steam bubbles, the steady growth of which will ultimately lead to cracking. Great though the advantages of suction may be, however, its use is not a necessary element in the application of the tuyere, which it will be readily understood, works well with pressure

also. The nozzle in the tuyere, as it fits into it well, is cooled by the circulation of the water in the latter, and can therefore be carried very near the end of the tuyere, a circumstance which aids the penetrating power of the blast. The nozzle may be easily drawn out through the belly pipe, if the cap on the tuyere pipe elbow is removed.

groove is turned in the inner face of the tire, and a similar one in the outside of the skeleton, so that, when the tire is slipped on the two come opposite to each other and form a channel of dovetail-shaped section going all round the wheel. Into this channel is run some easily-fusible metal (by preference pure zinc), which, on cooling, makes

made in the central workshops at Frankfurt.

## The Cost of Iron.

The Philadelphia North American says: In the year 1850 the cost of making iron in Pennsylvania was \$14.25 per ton, and in 1873

\$2.02; limestone, 8c.; interest, &c., \$2.81; total, \$18.36.

From these figures it would seem that in the aggregate cost the manufacture of pig iron in Central Pennsylvania had in 1877 returned to what it was in 1855, but not to what it was in 1850. The cost of ore was but little higher, but not nearly as low as in 1850. The cost of coal was higher; the cost of limestone was much lower than in 1850. Labor was lower than it had been in 1850 or 1855, but higher than in 1860. The interest, &c., was higher than ever. From these facts it appears that while we have made considerable progress in cheapening the cost of the manufacture of iron, there is still much to be done. Contrary to the general belief, labor seems to have returned to its ante-war standard, taking 1855 as a test. Limestone is cheaper than ever and coal is not dear. The cost of ore might be slightly reduced. Whether coal can be cheapened to the iron trade is a grave question we are not prepared to answer. The item for interest, &c., in 1877 embraces \$1.26 for interest on capital invested and \$1.65 for renewals, repairs, salaries, taxes, insurances and sundries. In 1850 the corresponding cost was only at \$1.68, and in 1864, in the midst of the inflation, it was \$1.66. Evidently this item has not been retrenched at all, since in 1873 it was \$2.76 and in 1877 it was \$2.91.

In all the history of the Pennsylvania iron manufacture, the heaviest items of cost have been the ore and the coal. In 1873 these two items cost \$20.45 out of \$32.33. There may, of course, be reasons why ore cost \$13.30 in 1873 and \$9.12 in 1864. But as in 1877 it had fallen to \$7.69, there is room to suspect that the actual cost of producing the ore was not the real secret of the enormous rise. That the rapid increase of iron works made a competition for the ore there can be no doubt. And herein is seen the great advantages possessed by large corporations owning iron mines, coal mines and limestone quarries. The general notion is that the excessive cost of labor raised the cost of all these things. The decline in the cost of ore is caused more by the large number of iron works out of blast than by any actual retrenchment in the cost of raising the ore.

We refer to these figures now for the purpose of showing that the profits of the ironmasters have been greatly misrepresented, and that when the price of iron was highest the margin of profit to the manufacturer was not excessive, nor indeed large. The demand for cheap coal had been answered as far as circumstances would permit; and yet the coal used by the iron furnaces was \$4.93 per ton in 1877, and in 1860 it cost only \$3.49. In 1871 the same coal had reached \$8.59, and in 1873 it had fallen to \$7.15. Of course the labor question enters into all these items of cost ore, limestone and iron manufacture at every stage. But at the highest point of the inflation the cost of labor in making a ton of iron had only reached \$3.54, while in 1855 it was \$2.87. Coal was then (1855) \$4.63 per ton. Those ironmasters who realized large fortunes in the trade did so by combining more than one branch of the business, and making profits on all. Iron was for a series of years in immense demand all over the world, but especially in this country. Protection enabled the manufacturers to maintain themselves against a heavy foreign competition, and to attract large amounts of capital to develop all the advanced forms of the iron industry. Those who now so constantly demand cheaper iron must be aware that in order to meet that demand, the items of cost must all be reduced more and more, whether the cheap iron be furnished by foreign or domestic producers. If we can cheapen our own cost advantageously, of course it should be done. And it is important to observe that thus far the cheapening has been wholly caused by the domestic competition. Cheap iron is desirable at all times. That fact must never be lost sight of. But in order that the cheapness should be enduring, it is indispensable that the domestic production shall not be crippled.

The government of the city of Paris is sustained by indirect taxation, there being little or no tax levied on real estate except for paving and repairing and keeping the streets in order. The housekeeper and the tenant pay the taxes, such as they are, but the greater portion of the revenue of the city comes from indirect taxation. Everything that is brought into Paris in the shape of food or for domestic purposes must pay an octroi, or entrance duty, at the gates of the city, or if by water, at the boats before it is landed. The receipts from this source this year amount to 200,000,000 francs, or about \$50,000,000; market dues, \$3,000,000; slaughter houses, \$800,000; rents of stands on the public ways, \$100,000; dues on burials, \$140,000; sales of lands in cemeteries, \$150,000; taxes for paving, lighting, &c., \$2,500,000; dog tax, \$110,000; sale of night soil, \$150,000—total receipts about \$47,000,000, without any direct tax upon real estate. The city of Paris never has any floating debt to fund, but always has a balance to add to the sinking fund, after expending about \$5,000,000 per annum for public improvements and the ornamentation of the city. It is the best governed city in the world, and has no rings or cliques to deplete its treasury.

The Lumberman's Gazette says there is a stock of 178,500,000 feet of lumber on the docks of the Saginaw River, in Michigan, of which 48,000,000 feet is sold.

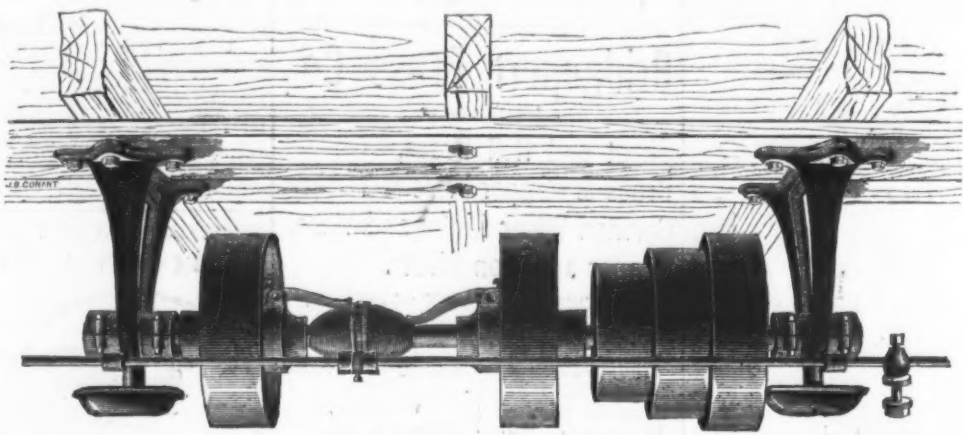


Fig. 1.—Counter Shaft and Pulleys.

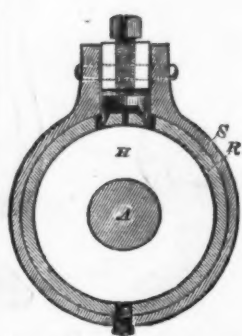


Fig. 3.—Section of Cut-off Clutch.



Fig. 5.—Clutch and Double Cone.

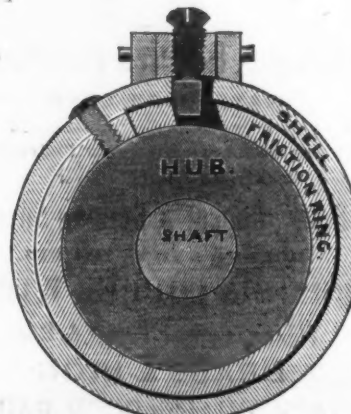


Fig. 6.—Section of Clutch applied to Pulley.

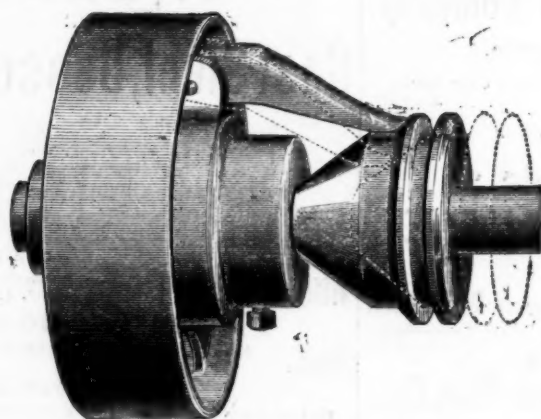


Fig. 4.—Clutch and Pulley.

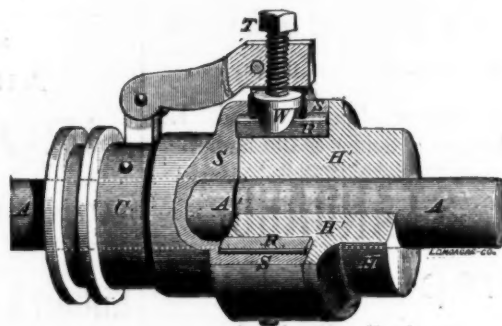


Fig. 2.—Cut-off Coupling Clutch.

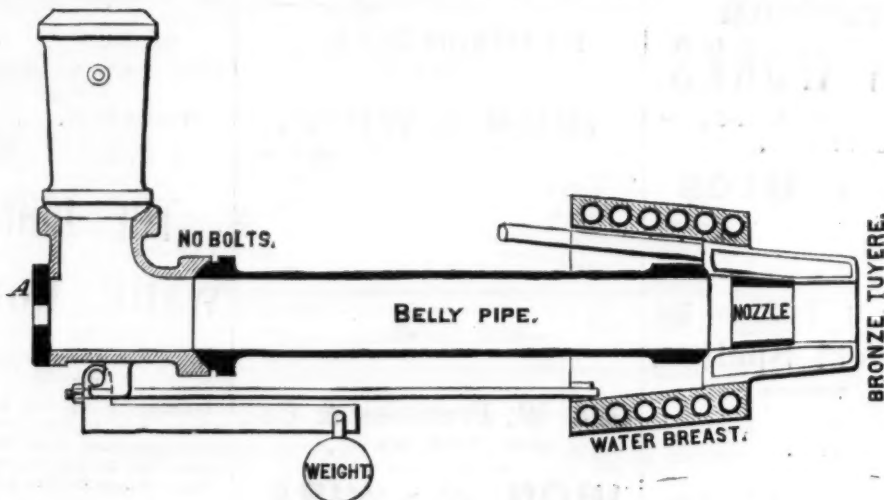
## THE HUB FRICTION CLUTCH.

When fire-brick stoves are used the tuyere pipes are made double, in order to prevent the serious loss of heat which otherwise takes place.

Messrs. Taws & Hartman's tuyere, besides securing the well-known advantages incident to the jacket type and the use of bronze, possesses the following special features of its own, which recommend it to blast furnace

a firm connection between the tire and wheel. In carrying out the operation the tire is only slightly heated, a shrinkage of 1-1200 being found ample, and is then brought over the skeleton, which is laid in a horizontal position, and forced upon it. The zinc is then immediately run in through holes cast in the skeleton, if of cast metal, or drilled in other cases; thus the zinc is at

the cost had risen to \$32.33. In 1851 the cost was but \$13.30 and in 1853 it was \$14.38. In 1854 commenced a rise in the cost to \$16, which was followed in 1855 by \$13.87, from which point the cost fell gradually to \$16.14 in 1850, and as late as 1863 it was only \$16.53. After that the inflation set everything wild. The items of this cost in 1850 were: Ore, \$5.75; coal, \$3.70; limestone, 93c.; labor,



SECTION OF AN IMPROVED TUYERE.

men: It is simple in construction, easily kept in order and rapidly repaired.

Tire Fastenings.—A new and valuable method of fastening tires, invented by Mr. Kaselowsky, a German engineer, has successfully stood the test of a series of experiments. A dove-tailed

once prevented from cooling while being run in, and is compressed, and thus rendered much stronger by the subsequent contraction of the tire. That this mode of fastening, in addition to its simplicity and cheapness, offers full security, both against sideways shiftings and in case of breakage of the tire, has been proved by experiments

\$2.22; interest, &c., \$1.68. In 1860 these items had changed thus: Ore, \$7.45; coal, \$3.49; limestone, \$1.21; labor, \$1.87; interest, &c., \$2.83. In 1873 the items cost thus: Ore, \$13.30; coal, \$7.15; limestone, \$1.97; labor, \$3.79; interest, &c., \$2.76. In June, 1877, the cost of the same items was stated thus: Ore, \$7.69; coal, \$4.93; labor,



**Metals.**

**ANSONIA  
BRASS & COPPER CO.,**  
19 and 21 Cliff Street.

Adjoining Office of PHELPS, DODGE & CO.

Sheet Brass, Sheet Copper, Copper Bot-  
tom, Brass Wire, Copper Wire.

Planished Brass, Polished  
Brass Door Rails, Hayden's Patent  
Brass Kettles, Brass Tubing,  
Lamp Burners, Gun Burners,  
Seamless Brass & Copper Pipe.

**THE ANSONIA**  
Corrugated Stove Platform.  
SEE PAGE 9.

**Phelps, Dodge & Co.,**

IMPORTERS OF

**TIN PLATE,**

Sheet Iron, Copper, Pig Tin, Wire,  
Zinc, etc.

MANUFACTURERS OF

**COPPER and BRASS.**

Cliff St., bet. John and Fulton,

NEW YORK.

**DICKERSON, VAN DUSEN & CO.,**

Importers of

Tin Plate, Pig Tin, Sheet Iron, Copper,  
Wire, Zinc, Etc.

29 & 31 Cliff St., cor. Fulton,  
DICKERSON & CO., Liverpool, NEW YORK.

**SCOVILL MFG CO**

**BRASS,**  
HINGES, WIRE, GERMAN SILVER.

PHOTOGRAPHIC GOODS.

**BUTTONS,**  
CLOTH AND METAL.

DEPOTS, 419 & 421 Broome St., N. Y.  
112 Federal St., Boston,  
183 Lake St., Chicago.

FACTORIES,  
Waterbury, Conn.  
New Haven, Conn.  
New York City.

**THE NEW HAVEN  
COPPER CO.,**

255 Pearl Street, New York.  
Manufacturers of and Dealers in

**Braziers' & Sheathing  
COPPER.**

Kettle Bottoms, Bolts, Circles, Rivets,  
Ingot Copper, Spelter, Solder, &c.

**PASSAIC ZINC CO.**

Manufacturers of

**Pure Spelter**

FOR  
Cartridge Brass, Gas Fixtures, Bronzes  
AND ALL FINE WORK.

Also for  
Galvanizers & Brass Founders.  
**MANNING & SQUIER, Gen'l Agents**  
113 Liberty Street, N. Y.

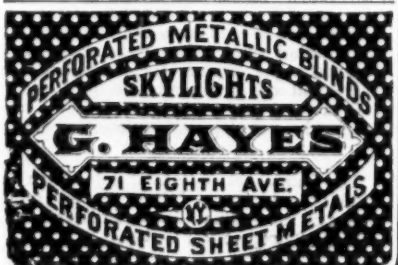
**JOHN STARR,**  
Hardware & Metal Broker,

AND  
MANUFACTURERS' AGENT,

Halifax, Nova Scotia,

representing in the Dominion of Canada several  
American Manufacturers, is ready to accept  
other Agencies. Satisfactory references.

**R. SELLEW & CO.**  
Dealers in **METALS,**  
Tin Plate, Sheet Iron, Copper, &c.  
SAINT LOUIS,

**Metals.**

**Waterbury Brass Co.**

CAPITAL, - - \$400,000.

JOHN SHERMAN, Agent,

296 Broadway, - - New York.  
Mills at WATERBURY, CONN.

Sheet, Rolled and Platers' Brass,

GERMAN SILVER,

Copper, Brass and German Silver Wire,

BRASS AND COPPER TUBING,

**COPPER RIVETS & BURS,**

WASH BASINS,

**BRASS KETTLES,**

DOOR RAIL, Brass Tags & Step Plates.

PERCUSSION CAPS,

**POWDER FLASKS,**

Metallic Eyelets,

Shot Pouches,

Tape Measures, etc.

"GREAT WESTERN" LANTERN.  
(All Brass), with Globes and Guards se-  
curely fastened.

93 INCHES HIGH.



Manufactured by the  
**MANHATTAN BRASS CO.,**  
83 Hester St., New York.

**Holmes, Booth & Haydens,**

WATERBURY, CONN.

NEW YORK, BOSTON,  
49 Chambers St. 18 Federal St.

Manufacturers of all kinds of

Brass, Copper & German Silver,

ROLLED AND IN SHEETS.

**BRASS & COPPER WIRE,**

Tubing, Copper Rivets & Burs.

**BRASS & IRON**

**JACK CHAIN, DOOR RAIL.**

German Silver Spoons,

**SILVER PLATED FORKS & SPOONS,**

Kerosene Burners, &c.

**JOHN DAVOL & SONS,**

Agents for

Brooklyn Brass and Copper Co.,

Dealers in

Ingot Copper, Spelter, Lead, Tin,

Antimony, Solder & Old Metals.

100 John Street, N. Y.

**STANDARD**

**Drop and Buck**

**SHOT.**

**Bailey, Farrell & Co**

Manufacturers,

Pittsburgh, - Pennsylvania.

PRICES MAILED ON APPLICATION.

**BALTIMORE**

**COPPER WORKS.**

**POPE, COLE & CO.,**

Are now Purchasing

**Copper Ores**

and smelting and refining at these works, where, with  
experienced workmen and unusual facilities, we are  
turning out Ingot and Cake Copper of unequalled  
purity and toughness.

We are prepared to buy Ores, Matte, Regulus and other  
furnace material in any quantities.

Office, 57 South Gay St., Baltimore Md.

Works at Canton

**Bergen Port Spelter.**

MINES: Lehigh Valley, Pa. WORKS & FURNACES:  
Bergen Port, N. J.

The only Miners and Manufacturers of

**PURE**

**LEHIGH**

**SPELTER,**

From Lehigh Ore.

Warranted free from any trace of Lead, and es-  
pecially adapted for

Cartridge Metal and German Silver.

Also manufacturers of

**BERGEN PORT OXIDE ZINC,**

Superior for LIQUID PAINT on account of its body  
and wearing properties.

**F. OSGOOD & CO., Proprietors.**

E. A. FISHER, Agent, 13 Burling Slip, N. Y.

**Metals.**

**The Plume & Atwood  
Mfg. Company,**

MANUFACTURERS OF

**SHEET and ROLL BRASS and WIRE,**

German Silver and Gilding Metal,

Copper Rivets and Burs,

**Kerosene Burners,**

Shoe Eyelets, Lamp Trimmings, &c.

80 Chambers Street, New York.

13 Federal Street, Boston.

Rolling Mill, Factories,

THOMASTON, CT. WATERBURY, CT.

**Bridgeport Brass Co.,**

MANUFACTURERS OF

Sheet and Roll Brass,

Brass & Copper Wire & Tubing,

German Silver Metal and Wire,

Copper and Iron Rivets.

OILERS and CUSPADORES, LAMPS and TRIMMINGS,

LANTERNS and TRIMMINGS, KEROSENE BURNERS,

CLOCKS and CLOCK MOVEMENTS.

Particular attention paid to cutting out Blanks and  
manufacturing Metal Goods.

MANUFACTORY, WAREHOUSE,  
Bridgeport, Conn. 19 Murray St., N. Y.

**New Jersey Wire Mill.**

**HENRY ROBERTS,**

Manufacturer of

**Steel & Iron Wire.**

SPECIALTIES:

Tinned Wire, Tinned Broom, Spring Wire, made  
from Bessemer Steel; Cast Steel and Iron Coppered  
Ball Wire; Rivet, Screw, Buckle, Umbrella, Fence,  
Brush, Gun Screw Wire; Sewing Machine and Ma-  
chinery Wire. Fine Wire for weaving. Also Wire  
of any shape made to order.

WIRE MILL, 39 Oliver St.,

Newark, N. J.

**Harrison Wire Company,**

ST. LOUIS, MO.

THOS. W. FITCH, CHAS. FISH,  
Pres't. and Treas. Secretary.

MANUFACTURERS OF

All kinds of

**IRON WIRE**

AND

**Wire Mill Specialties.**

THE

**Gilbert & Bennett Mfg. Co.,**

GEORGETOWN, CONN.,

MANUFACTURERS OF

**IRON WIRE, SIEVES AND**

**WIRE CLOTH,**

Power Loom Painted Screen Wire Cloth,

GILBERT'S RIVAL ASH SIEVE,

Galvanized Twist Wire Netting,

THE UNION METALLIC CLOTHES LINE WIRE,

Warehouse, - 273 Pearl St., New York.

**THE TRENTON IRON CO.,**

Trenton, N. J.

JAMES HALL, Treas. CHAS. HEWITT, Pres.

**IRON & WIRE.**

Bar Iron. Wire Rods. Brazier Rods.

Market Wire, Screw Wire, Weaving Wire,

Fence Wire, Spring Wire, Telegraph Wire,

Chain Wire, Bridge Wire, Buckle Wire,

Square and Flat Wire, "Martin" Steel Wire

Cast Steel Wire.

**GUN SCREW IRON WIRE.**

FENCE STAPLES.

Wire straightened and cut to lengths. Represented  
in New York by

**COOPER, HEWITT & CO.,**

17 Burling Slip.

**Geo. W. Prentiss & Co.,**

HOLYOKE, MASS.,

MANUFACTURERS OF

**IRON WIRE.**

Bright, Coppered, Annealed and Tin  
Plated. Also GUN SCREW WIRE.

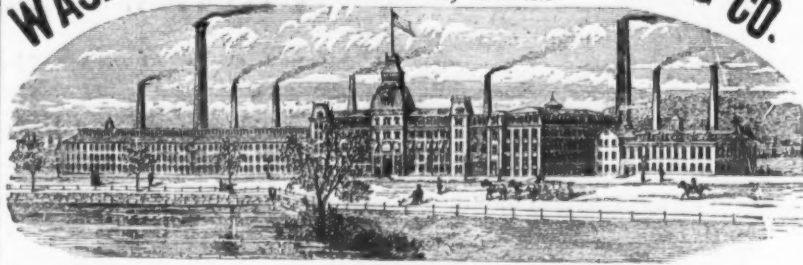
Of all sizes straightened and cut to order.

**Wire, etc.**

PHILIP L. MOEN,  
President & Treasurer.

CHAS. F. WASHBURN,  
Vice-President & Sec'y

**WASHBURN & MOEN MANUFACTURING CO.**  
Established 1831.  
WORCESTER, MASS.



MANUFACTURERS OF

**Iron and Steel Wire,**

**PATENT STEEL BARB FENCING,**

Patent Steel Wire Bale Ties.

WIRE RODS of all Grades; Round Iron, Direct quality, 3/16 in. to 1/2 in., cut to any length. Owners and ex-  
clusive Operators of the **PATENT CONTINUOUS ROLLING MILL**, producing Iron and Steel WIRE, in  
rolls of 100 pounds, without seam or weld. Patent Galvanized Telegraph Wire, Market and Stone Wire,  
Annealed Fence and Grape Wire in long lengths; Coppered Pull-Rail Wire; Rope, Bridge, Bolt, Screw, Rivet, Buckle  
and Chain Wire. Wire for the manufacture of Card Clothing, Heddies, Reeds, &c. Piano-string Covering Wire,  
Tinned Broom Wire and Tinned-plated Wire of all sizes. A specialty is made of Clock, Machinery, Gun Screw and  
Spiral Spring Wire, and Refined Wire to Pattern for particular purposes. From selected stamps of Norway Iron,  
Any grade of Wire furnished, Annealed, Bright, Polished, Coppered, Galvanized or Tin Plated. Wire furnished,  
straightened and cut to any length. **Steel Crinoline Wire**, Patent Linen finish. **Unriveted Steel Music**  
**Wire**. Steel Wire for Springs, Needles and Drills. Market Steel Wire kept in stock, all sizes.

WAREHOUSE, 42 CLIFF STREET, NEW YORK. St. Louis Office, 717 North 2d Street.

**NATIONAL WIRE & LANTERN WORKS,** Warehouse, 45 Fulton St., N. Y.

**HOWARD & MORSE,** Manufacturers of

Brass, Copper and Iron WIRE CLOTH.

Locomotive Spark Wire Cloth, Iron Wire Hoisting  
Cloth, Ship and Railroad Lanterns, Signal  
Lights, Conductors' Lanterns, Signal  
Adjustable Globe Hand Lantern, Desk and Office Reading, Bid-  
dies, Coal and Sand Screens, Nursery Fenders and Spack  
Guards. Ornamental Wire Fence.

No. 1, Star R. R. Lantern. Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.

Star Fire Department Lantern. Extra Heavy.


Star Fire Department Lantern. Extra Heavy.



**EXCELSIOR WIRE WORKS.**  
JOSEPH HADDETON,  
Manufacturer of every description of  
Wire Goods, Flower Stands, Desk and  
Counter Railings, Chairs, Sitters, &c.  
89 State Street, Rochester, N. Y.



**O. LINDEMANN & CO.**  
Manufacturers of  
Japanned, Brass and  
Silver Plated  
**Bird Cages.**  
Original inventors  
of  
**Bright Metal  
Cages,**  
Constructed without  
solder.  
254 Pearl St.,  
NEW YORK.  
Our cages can be  
nested for shipping.



**THE WORCESTER WIRE CO.,**  
Cambridge St., Worcester, Mass.  
MANUFACTURERS OF  
**IRON AND STEEL WIRE**  
OF EVERY SIZE AND GRADE.  
Classification List mailed on application.

**W. S. ESTEY,**  
Manufacturer and Dealer in  
**Wire Cloths, Wire Goods and Wire  
WORK** of every description.  
Galvanized Twist Netting for Fencing Henneries,  
&c. Foundry Riddles and Steel Casting Brushes.  
59 Fulton Street, New York.

**SHEPARD  
HAND  
FLUTER.**



**Extra Large Iron Roller.**  
NICKEL PLATED. TWO HEATERS.  
**Shepard Hardware Co.,**  
(Successors to Jno. D. SHEPARD.)  
MANUFACTURERS.  
Send for Catalogue. BUFFALO, N. Y.

**A. F. PIKE,**  
East Haverhill, New Hampshire,  
Manufacturer and Wholesale Dealer in  
**Scythe, Axe, Knife and Hacker  
STONES.**

**LETOILE,  
UNION,  
PREMIUM,  
DIAMOND GRIT,  
WHITE MOUNTAIN,  
INDIAN POND** (red ends)  
stones gotten up or labeled in  
any style desired. Price and  
quality guaranteed.  
Our stones are of good keen  
edge and will not glaze.



**Clayton Steam Pump Works.**  
**AIR COMPRESSORS,  
STEAM PUMPS,**  
for Water, Air & Vacuum.  
Prices greatly reduced.  
Send for circulars.  
JAS. CLAYTON,  
11 & 16 Water St.,  
Brooklyn, N. Y.




**S. L. SAMUEL,**  
Hardware Manufacturers' Agent  
**For EXPORT.**  
Advances made on consignments.  
No. 57 Cedar Street, - NEW YORK.

**ESTABLISHED 1835**  
**HARDWARE TOOL CO.**  
**BEMIS & CALL**  
ALL GOODS STAMPED BEMIS & CALL  
NONE OTHERS GENUINE



**CARY & MOEN,**  
Manufacturers of  
**STEEL WIRE** for all purposes, and **STEEL SPRINGS** of every description.



Market Steel Wire, Crinoline Wire, tempered and covered.  
Also Patent Tempered Steel Furniture Springs, constantly on hand.  
934, 936 and 938 West 29th Street, NEW YORK.

**THE PERFECTION STOVE PIPE.**  
(PATENTED)  
**Reduction in Price.**



Our large production of this article enables us to reduce prices, as will be noted below. This Pipe is rapidly gaining in favor and must eventually supersede the old style entirely. Made wholly by machinery, every joint is exactly alike, and all fit together with perfect accuracy. A child can adjust it, no tools being required. It is indispensable in the household on this account. Fifty joints of 5 inch Pipe can be packed in a case 10 inches square by 24 inches long inside, thus occupying hardly more room than 12 in. Pipe, and securing the lowest rates of freight. The following are net cash prices, no charge for cases: 5 in., per joint, 11c.; 6 in., per joint, 12c. Other sizes in proportion.

SOLE MANUFACTURERS,  
**THE CHICAGO STAMPING CO.,**  
Nos. 10, 12 & 14 Lake St., Chicago.  
For sale in New York by E. KETCHAM & CO., 100 Beekman St.

**ESTABLISHED IN 1848.**  
**SINGER, NIMICK & CO.,**  
PITTSBURGH, PA.  
MANUFACTURERS OF ALL KINDS OF  
**HAMMERED AND ROLLED  
STEEL,**  
**Warranted Equal to any Produced.**  
**BEST REFINED TOOL CAST STEEL**  
For Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-Knives,  
Cold-Chisels and Machinists' Tools generally.  
**SAW PLATES**  
For Circular, Muley, Mill, Gang, Drag, Pit and Cross-Cut Saws.  
**Sheet Steel**  
For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws,  
Stamping Cold, &c., &c.  
**SIEMENS-MARTIN (Open-Hearth) PLATE STEEL**  
For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.  
All our Plate and Sheet Steel being rolled by a Patented Improvement is unequalled for surface finish and exactness of gauge.  
**ROUND MACHINERY CAST STEEL**  
For Shafting, Spindles, Rollers, &c., &c.  
File, Fork, Hoe, Rake, R. B. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.;  
Cast and German Spring and Plow Steel.  
"Iron Center" Cast Plow Steel. Finished Rolling Plow Coulters with Patent Screw Hubs attached.  
"Soft Steel Center" Cast Plow Steel. Agricultural Steel cut to any pattern desired.  
"Solid Soft Center" Cast Plow Steel. Steel Forgings made to order.

Represented at 59 BECKMAN ST., NEW YORK, by  
**HOGAN & BURROWS,** Gen'l Agents for Eastern and New England States.

**G. W. Bradley's Edge Tools.**

Butchers' Cleavers,  
Butchers' Choppers,  
Axes and Hatchets,  
Grub Hoes and Mattocks,  
Mill Picks,  
Box Chisels and Scrapers,  
Ring Bush Hooks,  
Ax Eye Bush Hooks,  
Socket Bush Hooks,  
Watt's Ship Carpenters' Tools,  
Carpenters' Drawing Knives,  
Coopers' and Turpentine Tools.

FOR SALE BY  
**MARTIN DOSCHER,** Agent, 96 Chambers Street, N. Y.

**N. & G. TAYLOR CO.**  
PHILADELPHIA,  
Importers of  
**TIN PLATE AND METALS,**  
Manufacturers' Agents, and Dealers in all kinds of  
Sheet Iron, Copper, Solder, Wire, Rivets, Zinc, Sheet Metal  
Elbows, &c.  
PLAIN & REFINED DEEP STAMPED WARE, COMMON STAMPED WARE,  
Tin and Sheet Iron Workers' Tools and Machines.  
Established 1810. PHILADELPHIA.

**STONE IRON WARE.**  
Patented in America and Europe and  
Popular Everywhere.  
FERNALD & SISE, 100 Chambers St., New York Agts.



**THE METAL STAMPING & ENAMELING CO.,** 708, 710 & 712 Second St., ST. LOUIS, MO.

## Industry and Trade in the North of England.

Mr. E. R. Jones, United States Consul at Newcastle-upon-Tyne, England, reports as follows:

In the summer of 1873 the engineers of Newcastle-upon-Tyne, numbering over 8000, turned out on strike for a reduction of the hours of labor from 59 to 54 hours per week. The men were successful; and on the 12th of October, after a strike of 20 weeks, they returned to their labor under the nine hours' system. National importance was given to the struggle then going on between capital and labor on the Tyne. The victory of labor was submitted to all over England; and nine hours became a day's work throughout this country. Without asserting or denying the cry of many that depression of trade followed as a consequence of "the nine hours' movement," we are quite entitled to take the period of the great engineers' strike—1873—as the high-water mark of commercial prosperity in England. In the North of England, but more especially on the banks of the Tyne, this prosperity was without precedent in the history of the district, and extended to every branch of industry.

### THE NORTHUMBERLAND MINERS.

During the period of prosperity the efforts of trades unions toward securing advance of wages were felt in every branch of the labor market, and were uniformly successful. The power of the unions also reached the culminating point of success in the victory of the Newcastle engineers in 1873. Since that time we have had unsuccessful strikes against a reduction of wages in various parts of this country. The Northumberland miners, under the able secretaryship of Mr. Thomas Burt, M. P., are the best organized, though not the most powerful, body of workmen in England. But the proposition that strikes against a falling market must fail has again been established by the recent failure of this organization to prevent a reduction of 12½ per cent. insisted upon by the coal owners, who positively refused to submit the question to arbitration. The coal of Northumberland and Durham is the foundation of the commercial and manufacturing importance of this district. A glance at the depression of that trade from the commencement of 1874 until the present time, as indicated by prices, gives a faithful representation of the general decline in the North of England.

During the prosperous year leading up to 1874 coals had doubled in value, reaching the extraordinary price of 23/ per ton. Coal hewers, participating fairly in the extra profits of the coal owners, were then receiving 9/ per day of six hours (at face working), with coals and houses free. The several advances obtained by the men, amounting in all to 50/, were always decided by arbitration, and when the decline set in the amount of reductions was settled in the same friendly manner. More than thirty years had elapsed since a general strike or lockout had occurred in the Northumberland coal trade. Confidence, good feeling and mutual respect were shared by masters and men alike, and the principles of arbitration seemed firmly established. The tide of prosperity turned with 1873, and during the spring of 1874 the first reduction of wages, amounting to 6½ per cent., took place. Four more reductions followed, and in the autumn of last year a request was made by the coal owners for a still further reduction of 12½ per cent. The first step in a controversy which ended in a strike (as the coal owners style it) was taken in the following letter sent by Mr. Bunting, secretary of the Coal Owners' Association, to Mr. Burt, M. P., secretary of the miners:

"DEAR SIR: We regret to have to inform you that the exigencies of the trade require us immediately to apply to you for a reduction in wages. We wish as much as possible to act with all courtesy toward your association, and ask you to send a deputation to meet us here on Saturday, the 1st of December, at 11.30 o'clock, to receive our request and to hear the reasons that have compelled us to make it."

A deputation representing the miners met the coal owners according to the terms of the above letter, when a reduction of 12½ per cent. was demanded. This was refused. The representatives of the men urged that the question should be referred to arbitration, but the coal owners had evidently decided before open action was taken not to submit to that mode of settlement. A two weeks' notice was served upon the men. At the expiration of that time they came out on strike against the reduction. Ultimately the representatives of the men proposed to accept a reduction of 10 per cent., but the owners declined the offer, and advertised in the daily papers "that the pits were open to any man who would accept 12½ per cent. reduction." The difference between employer and employed was only 2½ per cent., and it was proposed on behalf of the men that the difference should be referred to an umpire. This offer, however, was rejected by the coal owners, who were determined to carry every point and the full reduction of 12½ per cent. This strike of 8000 men lasted eight weeks, and was attended by much suffering and privation. The men and their families displayed great fortitude and good feeling; and the absence of crime from the district during so long a time and at a period of great depression, reflects additional credit upon the high moral character of the Northumberland miners. While the coal owners were firm, if not stubborn, in insisting upon the whole of the reduction demanded, they were otherwise moved by generous feelings. None of the strikers were ejected from the houses which they occupied free of rent; and the old hands were re-engaged when the struggle was ended by the complete victory of the capitalists.

The number and amounts of the reductions in the wages of the Northumberland miners from the commencement of 1874 to the present time (June, 1878) are as follows: April, 1874, 6½ per cent.; October, 1874, 10 per cent.; March, 1875, 8 per cent. steam coal, 10 per cent. manufacturing coal; January, 1876, 7 per cent.; October 1876, 7 per cent.; February, 1878, 12½ per cent.

The great extent of the depression in the Northumberland coal trade since 1873 will

be seen at once by the following: The number of men working underground in 1873 was 16,000; in 1878, 12,000. Hours worked by coal getters (at face of working), 1873, 6 hours; 1878, 6½ hours. Wages earned per day by coal getters, 1873, 9/; 1878, steam coal, 5/4; mfg. coal, 4/10. Off-hand men, 1873, 7/; 1878, 3/6. Hours worked per day by off-hand men (from bank to bank), 1873 and 1878, 8 hours. Days worked per week by coal getters, 1873, 5 days; 1878, 3½ days. Off-hand men, 1873, 6 days; 1878, 5 days.

During the period of prosperity the great demand for men to work in the pits and the high wages paid, induced a large number, especially of agricultural laborers, to seek employment in the coal trade; and in 1873 the number of men working underground reached 16,000. But when the depression of trade set in, and was followed by reduced wages, 4000 of these men were obliged to return to their former employment or look to some other branch of industry for means of livelihood. The number of men therefore working underground in (June 1878) was only 12,000. It will be seen by the foregoing that the average wages during the good times was 9/ per day. The hewers worked 5 out of the 6 working days, thus earning 45/ per week. Three days and a half is the average number of days worked in the Northumberland collieries now, which at say 5/ per day, reduces earnings now to 17/6 per week, against 45/ per week in 1873. The depressed state of the coal trade is further illustrated by the fact that during the last two years and a half several collieries have stopped working, and during the same period the sum of £15,000 has been distributed by the Northumberland Miners' Association to support men thrown out of employment, or in furnishing them with transportation to other parts of the kingdom.

A single reference to the habits of the miners and I have done with this part of my report. Mr. John Stuart Mill says that "the majority of Englishmen have no life but in their work, that alone stands between them and *ennui*. The absence of any taste for amusement or enjoyment of repose is common to all classes." This is not true when applied to the Northumberland miners. They are great bird fanciers; and their skill as gardeners, under great difficulties, enables many of them to compete successfully at the local flower shows. They are also enthusiastic sportsmen. Every Saturday afternoon throughout the summer the Newcastle Town Moor is visited by thousands of pitmen who come to witness their fellow workmen playing matches at the game of bowls for stakes varying from £5 to £50 a side. This, I may explain, is not the game generally known as bowls, but consists simply of throwing a stone ball, varying in weight from 10 to 18 ounces, in successive throws over a straight mile course. The fondness of the miners of this district for dogs is notorious throughout the country, and during the recent strike, when it became known that the pitmen were obliged to part with their pet animals for want of the money to pay for the licenses, Mr. Peacock, of London, sent a check for £25 to the secretary of the miners with the request that the money should be applied to procure licenses in the most deserving cases.

### AGRICULTURAL LABORERS.

The position of the agricultural laborer in Great Britain has been very much improved within the last 30 years; his remuneration has increased about 35 per cent. during that time. It is a noteworthy fact that wages in Scotland and the northern counties of England are at least 30 per cent. higher than they are in the southern counties. The average weekly wages paid in the southeastern parts of Scotland and northern counties of England in 1850 was 11/6; in 1873, 18/; in 1878, 17/1. And in the southern counties of England in 1850 it was 8/5; in 1873, 12/; in 1878, 11/6.

The excellence of agriculture in Scotland over the South of England is to a great extent due to the superior intelligence of the peasantry, arising from the early establishment of parochial schools in Scotland. The northern English counties have been able to draw upon the country beyond the Tweed, and have thus participated in the advantages. The difference in the system of the northern and the southern counties of England contributes to the advantage of the former. In many of the southern districts of England the cottages adjacent to the farms occupied by the laborers under the system prevailing 100 years ago have been pulled down by landlords and tenants in order to lessen their share of the poor rates. This is a short-sighted policy. The laborers are thus forced to reside in the adjoining towns and villages and pay extravagant prices for wretched apartments in crowded situations. They are thrown into the way of temptation to the national weakness for drink, and both time and energy are wasted in going long distances to and from their work. In 1770, many years before the system of housing the laborers was done away with, the average weekly wages paid in the southern counties were in advance of that paid in the northern counties. In the North of England and the southeastern counties of Scotland the very opposite policy is carried out. The majority of farms are provided with as many cottages as will accommodate all the people steadily required to work them. The farmers are thus enabled to secure a permanent staff of laborers upon whose services they can rely. On the other hand, the men are secure in their situations against slack times, bad weather and casual sickness; and they are removed from the pernicious influence of the village taverns and public houses of the towns, which take away the limited means sadly required toward procuring the necessities of life, and often leave the men exhausted and unfit to perform a fair day's work. It is generally acknowledged by those who are authority upon the subject that the Northern English counties and the southeastern district of Scotland in which this system of housing the men prevails, have an agricultural population superior for intelligence, good conduct and general well-being to any in Great Britain.

WAGES PAID BY THE TYNE STEAM SHIPPING COMPANY.

An inquiry as to the wages paid by the Tyne Steam Shipping Company to men em-



**Iron.**  
NEW YORK.  
**OGDEN & WALLACE,**  
Successors to GAM'L G. SMITH & CO.,  
**IRON & STEEL,**  
85, 87, 89 & 91 ELM ST., N. Y.  
**COMMON AND REFINED  
BAR IRON.**  
SHEET AND PLATE IRON,  
HOOP, BAND AND SCROLL IRON,  
Rod and Horse Shoe Iron,  
Angle and T Iron,  
Swedes and Norway Iron, Norway Nail Rods.  
Iron of all sizes and shapes made to order.

**PIERSON & CO.,**  
24 & 26 Broadway, 77 & 79 New St.,  
NEW YORK CITY.  
"PICKS" of all kinds,  
ESOPUS" HORSE SHOE IRON  
BEAMS, ANGLES,  
Tees, Channels, Sheets, Plates.  
All descriptions in stock.

**IRON & STEEL.**

**J. H. JACKSON & CO.,**  
208 & 208 Franklin St., N. Y.,  
Importers and Dealers in

**IRON and STEEL.**

Agents for  
**JOHN A. GRISWOLD & CO'S**  
Bessemer Steel,  
MACHINERY STEEL,  
Cast Steel and  
SPRING STEEL,  
ANGLE and T IRON.  
Special Irons for Bridge and  
Architectural Work.

**ABEEL BROTHERS,**  
Established 1765 by ABEEL & BYVANCK,  
**Iron Merchants,**  
190 South Street and 365 Water, N. Y.  
**ULSTER IRON**  
A full assortment of all sizes constantly on hand.  
Refined Iron,  
Horse-Shoe Iron,  
Common Iron.  
Band, Hoop and Scroll Iron.  
Sheet Iron.  
Norway Nail Rods.  
Norway Shares.  
Cast, Spring and Tire Steel, etc.

**A. R. Whitney,**  
Manufacturer of and Dealer in  
**IRON,**

58, 58 & 60 Hudson,  
48, 50 & 52 Thomas, and  
12, 14 & 16 West Sts.,  
NEW YORK.  
Our specialty is in  
Manufacturing Iron Used in the Con-  
struction of Fire-Proof Buildings,  
Bridges, &c.  
Plans and estimates furnished, and contracts made  
for erecting Iron Structures of every description.  
Goods containing cuts of all iron made sent on ap-  
plication by mail.  
Sample pieces at office. Please address  
58 Hudson Street.

**BORDEN & LOVELL,**  
**Commission Merchants**  
70 & 71 West St.,  
New York.  
Agents for the sale of  
Fall River Iron Co.'s Nails,  
Bands Hoops & Rods  
AND  
Borden Mining Company's  
Cumberland Coals.

**WILLIAM H. WALLACE & CO.,**  
**IRON MERCHANTS**  
Cor. Albany & Washington Sts.,  
NEW YORK CITY.  
WM. H. WALLACE. WM. BISHAM.

**DANIEL F. COONEY,**  
Late of and Successor to JAS. H. HOLDANE & CO.,  
88 Washington St., N. Y.  
**BOILER PLATES and SHEET IRON,**  
LAP WELDED BOILER FLUES.  
Boiler Rivets, Angle & T Iron, Cut Nails & Spikes.  
Agency for Pottsville Iron Co., Vianect Iron Works,  
Lebanon Rolling Mills, Pine Iron Works, Laurel Iron  
Works, The Bergen Rolling Mills, at Jersey City.

**OXFORD IRON CO.,**  
**Cut Nails and Spikes,**  
R. R. Spikes, Splice Bars and  
Nuts and Bolts,  
23 & 26 Washington, near Rector St., N. Y.  
JAMES S. SCRANTON, Agent.

**Iron.**  
NEW YORK.  
**G. HUERSTEL,**  
**IRON and STEEL,**  
Warehouse, 99 Market Slip, N. Y.  
Sole Agent for Sweet's Toe Calks.  
Constantly on hand, Refined and Common Iron, Horse  
Shoe Iron and Nails, Norway Iron, Cast, Spring,  
Toe Calk and Bessemer Steel Tire.  
Also SPRINGS, AXLES AND BOLTS.  
For Truck and Carriage Makers.

**A. B. Warner & Son,**  
**IRON MERCHANTS,**  
28 & 29 West and 52 Washington Sts.  
**BOILER PLATE,**  
Boiler Tubes, Angle, Tee & Girder Iron,  
Boiler and Tank Rivets.  
Sole Agents for the celebrated  
"Eureka," Pennocks,  
"Wawasset," Lukens,  
Brands of Iron. Also all descriptions of Plate, Sheet,  
and Gasometer Iron. Special attention to Locomotive  
Iron. Fire Box Iron a specialty.

**POWERTVILLE  
ROLLING MILL.**  
JOHN LEONARD,  
450 & 451 West Street, NEW YORK.  
Manufacturer of Best Quality  
**HORSE SHOE IRON,**  
And HOOPS. Also Best Quality  
Cold Blast Charcoal Scrap Blooms,  
And Dealer in OLD IRON.

**Geo. A. Boynton**  
**BROKER IN IRON**  
70 WALL ST., N.Y.

**MARSHALL LEFFERTS,**  
90 Beekman St., New York City,  
MANUFACTURER AND DEALER.  
**Galvanized Sheet Iron,**  
1st and 2d Qualities.

Galvanized Wire, Telegraph and Fence; Galvanized  
Hoop and Band Iron, Galvanized Rod and Bar Iron,  
Galvanized Nails, Galvanized Chain, Galvanized Iron  
Pipe.  
**CORRUGATED SHEET IRON**  
For Roofing, &c., Galvanized, Plain or Painted.  
Best Charcoal, Best Refined and Common  
**SHEET IRON.**

**Plate and Tank Iron,**  
C No. 1, C H No. 1, C H No. 1 Flange, Best Flange  
Best Flange Fire Box, Circles.  
**BOILER IRON**  
Stamped and Guaranteed.  
All descriptions of Iron Work Galvanized or  
Tinned to order.  
Price list and quotations sent upon application.

**Dan'l W. Richards & Co.,**  
Importers of and Dealers in  
**SCRAP IRON,**  
**Pig Iron,**  
**OLD METALS.**  
88 to 104 Mangin Street,  
Foot of Stanton St., E. R., NEW YORK.

**JAMES WILLIAMSON & CO.,**  
SCOTCH AND AMERICAN  
**PIG IRON,**  
No. 69 Wall St., New York.

**W. J. Carmichael,**  
DEALER IN  
**Iron & Steel Boiler Plate,**  
Lap Welded Boiler Tubes, &c., &c.  
130 & 132 Cedar Street, New York.  
Agent for Otis' celebrated Cast Steel Boiler Plates.

**POTTSVILLE SPIKE, BOLT AND NUT WORKS.**

**RAILROAD SPIKES,** **MINING SPIKES,**  
**MACHINE BOLTS,** **MACHINE FORCED NUTS,**  
**TRACK BOLTS &c.**  
**GEO. D. ROSEBERRY, Manufacturer, Pottsville, Pa.**

**LEECHBURG IRON WORKS.**  
**KIRKPATRICK, BEALE & CO.**  
Manufacturers of all grades of

**FINE SHEET IRONS,**  
(Refined, Cold Rolled, Show Card, Stamping, Tea Tray, Polished, Shovel.)  
**TIN AND TERNE PLATES,** made with Natural Gas as fuel.  
OFFICE, No. 116 Water St. Pittsburgh, Pa. WORKS, Leechburg, Pa.

**Iron.**  
NEW YORK.  
**John W. Quincy,**  
98 William Street, New York.  
**Anthracite & Charcoal Pig Irons,**  
Wrought Scrap, Cut Nails, Copper,  
BLOCK TIN, LEAD, SPELTER, ANTIMONY, NICKEL, &c.

**Fuller Mills and Anchor**  
**CUT NAILS,**  
HOT PRESSED NUTS,  
BOLTS, WASHERS, &c.  
**Fuller Brothers & Co.,**  
139 Greenwich Street, New York.

**HARRISON & GILLOON**  
**IRON AND METAL DEALERS,**  
328, 350, 352 WATER ST., and 302, 304, 306 CHERRY ST.,  
NEW YORK.  
Have on hand, and offer for sale, the following:  
Scotch and American Pig Iron, Wrought, Cast and  
Machinery Scrap Iron, Car-Wheels, Axles and Heavy  
Wrought Iron, also old Copper, Composition, Brass,  
Lead, Pewter, Zinc, &c.

**BURDEN'S**  
**HORSE SHOES.**  
"Burden Best"  
Iron  
Boiler Rivets.  
Burden Iron Works, H. Burden & Sons,  
Troy, N. Y.

**B. F. JUDSON,**  
Importer of and Dealer in  
**SCOTCH AND AMERICAN**  
**Pig Iron,**  
Wrought & Cast Scrap Iron,  
**OLD METALS.**  
457 & 459 Water St.,  
233 & 235 South St., NEW YORK.

**Passaic Rolling Mill Co.,**  
PATERNON, N. J.  
**Iron Bridge Builders**  
And Manufacturers of  
Beams, Channels, Angles,  
**TEES,**  
Merchant Iron, &c., &c.  
New York Office, 138 Chambers Street.

**WATTS COOKE, President.**  
W. O. FAYERWEATHER, Treasurer.  
**P. W. GALLAUDET,**  
Banker and Note Broker,  
Nos. 3 and 5 Wall Street,  
NEW YORK.

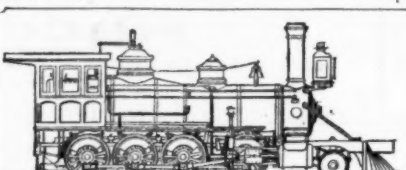
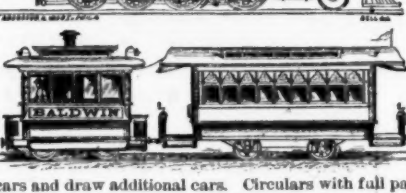
HARDWARE, METAL, IRON, RUBBER, SHOE,  
PAPER AND PAPER-HANGINGS, LUMBER, COAL  
AND RAILROAD PAPER WANTED.  
ADVANCES MADE ON BUSINESS PAPER AND  
OTHER SECURITIES.  
**Moseley Iron Bridge & Roof Co.,**  
**CORRUGATED IRON**  
Buildings, Roofs, Shutters,  
Doors, Iron Sashes,  
Skylights, &c.  
5 Day Street, New York.

**Iron.**  
PITTSBURGH.  
**W. D. WOOD & CO'S**  
  
**PATENT**  
**Planished Sheet Iron.**  
Patented March 14th, 1865; April 8th, 1873;  
Sept. 9th, 1873; Oct. 6th, 1874; Jan. 11, 1876  
Guaranteed fully equal in all respects to the  
**IMPORTED RUSSIA IRON,**  
and at a much less price.  
**FOR SALE,**  
by all the principal  
**METAL DEALERS**  
In the Large cities throughout  
THE UNITED STATES.  
And at their Office,  
111 Water Street, PITTSBURGH, PA.

**JOHN COYNE.** **A. G. HATRY.**  
**COYNE & HATRY,**  
Patentees and Manufacturers of  
**Automatic Nail Selectors,**  
IMPROVED CUT NAIL MACHINES,  
And Nail Factory Supplies.  
WORKS, cor. 20th & Mulberry Sts.,  
OFFICE, No. 114 & 115 Water St., Pittsburgh, Pa.

**C. KANE,**  
Dealer in  
**SCRAP IRON.**  
CAR SPRINGS,  
CAR AXLES,  
CAR WHEELS,  
OLD RAILS.  
A SPECIALTY.  
Also Bar Iron, Pig Iron and Blooms sold on commis-  
sion. DUQUESNE WAY, near 5th St., PITTSBURGH, PA.

Agency of N. M. HÖGLUND, Stockholm.  
**Swedish & Norway Iron**  
of every description. Stock on hand at Boston,  
New York and Philadelphia. Importation orders a  
specialty.  
**GUSTAF LUNDBERG,**  
(Successor to NILS MITANDER) 38 Kilby St., Boston.  
ALBERT POTTS, Philadelphia Agent, 234 & 236 N  
Front Street.

  
  
cars and draw additional cars. Circulars with full particulars supplied.

**ZUC & CO.,**  
Pittsburgh, Pa.,  
Manufacturers of

**Wheeler's Iron & Steel Combination Shafting,**  
Under license of the Combination Trust Co., Philadelphia.  
This Shafting is superior to any now on the market, and the attention of machinists is  
particularly called to it and a trial order solicited. Prices furnished on application.

**MIDVALE STEEL WORKS.**  
Works and Office, NICETOWN, PHILADELPHIA, PA.  
MANUFACTURERS OF

**CRUCIBLE AND OPEN HEARTH STEEL,**  
Steel Locomotive and Car Wheel Tires. Steel Axles of every description.  
**STEEL FORGINGS UP TO 8000 lbs. IN WEIGHT.**  
Solid Steel Castings, Hammer Dies, Frogs, Crossings, etc.  
**BEST TOOL, MACHINERY AND SPRING STEELS.**  
WM. SELLERS, Pres. CHAS. A. BRINLEY, Supt. MARIOTT C. SMYTH, Sec. & Treas.

**IRON**

**Iron.**  
PITTSBURGH.  
**A. G. HATRY.** **PORTER C. FRIEND**  
**HATRY & FRIEND,**  
**Commission Merchants**  
AND DEALERS IN  
Bar, Sheet, Tank, Boiler, Angle, T,  
and Railroad Iron,  
Nails & Spikes, Steel & R. R. Supplies.  
WINDOW GLASS, GAS PIPE & BORAX.  
PITTSBURGH, PA.

**JUNIATA**  
  
**ROADSTER  
PATTERN.**

**HORSE SHOES.**  
Nails and Spikes,  
**STEEL TOE CALKS.**

Horse Shoe Bar  
AND SHEET IRON.  
**SHOENBERGER & CO.** Pittsburgh,  
Pa.  
H. E. COLLINS. JAS. H. MURCOCK.

**H. E. COLLINS & CO.,**  
BROKERS IN  
**Manufactured**  
**IRON, NAILS**

AND  
**STEEL,**  
Pig Iron, Iron and Steel Rails,  
**METALS,**  
Railway Supplies, Old Rails and Railway Scrap,  
PITTSBURGH, PA.

**BALDWIN LOCOMOTIVE WORKS,**  
BURNHAM, PARRY, WILLIAMS & CO., Proprietors,  
Philadelphia, Pa., U. S. A.,  
Manufacturers of

**LOCOMOTIVE ENGINES**  
of every Description.  
Catalogues, photographs and estimates fur-  
nished on application of customers.  
**NOISELESS STEAM MOTORS,**  
For city and suburban Railways.  
These machines are nearly noiseless in opera-  
tion; show no smoke with the use of anthracite  
coal or coke as fuel, and show no steam whatever  
under ordinary conditions of service. They can  
be run at two or three times the speed of horse

**ZUC & CO.,**  
Pittsburgh, Pa.,  
Manufacturers of

**Wheeler's Iron & Steel Combination Shafting,**  
Under license of the Combination Trust Co., Philadelphia.  
This Shafting is superior to any now on the market, and the attention of machinists is  
particularly called to it and a trial order solicited. Prices furnished on application.

**MIDVALE STEEL WORKS.**  
Works and Office, NICETOWN, PHILADELPHIA, PA.  
MANUFACTURERS OF

**CRUCIBLE AND OPEN HEARTH STEEL,**  
Steel Locomotive and Car Wheel Tires. Steel Axles of every description.  
**STEEL FORGINGS UP TO 8000 lbs. IN WEIGHT.**  
Solid Steel Castings, Hammer Dies, Frogs, Crossings, etc.  
**BEST TOOL, MACHINERY AND SPRING STEELS.**  
WM. SELLERS, Pres. CHAS. A. BRINLEY, Supt. MARIOTT C. SMYTH, Sec. & Treas.

**HOUDLETTE & ELLIS,**  
19 Batterymarch Street, Boston, Mass.,  
MANUFACTURERS' AGENTS AND DEALERS IN

**Homogeneous Steel and Iron Boiler Plates,**  
SHEET and TANK IRON—BOILER, TANK and SAFE RIVETS,  
Best Lap-Welded Iron Boiler Tubes,  
Wrought Iron Girder, Deck & Channel Beams,  
Angle, T and Grooved Iron,  
"WALKER'S" FORGED and HAMMERED HORSE SHOES  
FRED. A. HOUDLETTE, Formerly with Bay State Iron Co. WM. R. ELLIS, Treas. Boston Rolling Mills



**Iron.**  
PHILADELPHIA.

**Siemens' Regenerative GAS FURNACE.**  
**RICHMOND & POTTS,**  
119 S. Fourth St., PHILADELPHIA, PA.

**A. PURVES & SON,**  
Corner South & Penn Streets, Phila.,  
Dealers in  
Scrap Iron & Metals, Machinery, Tools,  
Shafting & Pulleys, Steam Engines,  
Pumps & Boilers, Copper, Brass,  
Tin, Habbit Metals, Foundry  
Facings. Best Quality Pigot Brass.  
Cash paid for all kinds of Metals and Tools.

**CHESTER IRON COMPANY,**  
MINERS AND SHIPPERS OF  
**Magnetic Iron Ore.**  
The "BLUE" (Red Short) and "RED" (Neutral) Bessemer Ores, from Hacklebarney and Chester, New Jersey.  
Price "Blue" Ore hand-broken and selected for July is \$2.50 cash, f. o. b. Hacklebarney Mines.  
J. WESLEY PULLMAN, Treas., 407 Walnut St., Philadelphia.

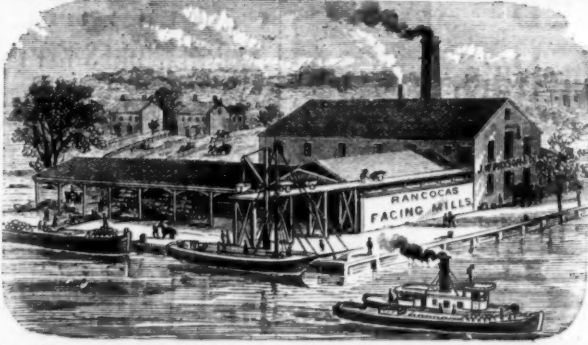
**The Cambria Iron and Steel Works,**  
Having enjoyed for over TWENTY YEARS the reputation of producing the best quality of  
**RAILS,**  
have now an annual capacity of  
100,000 Tons of Iron and Steel Rails, Splice Bars, &c.  
ADDRESS,  
**CAMBRIA IRON COMPANY,**  
No. 218 South 4th Street, Philadelphia.  
Or at the Works, **JOHNSTOWN, PA.**  
Or J. S. KENNEDY & CO., New York Selling Agency, 41 Cedar St., N. Y.

**THE PHOENIX IRON CO.,**  
410 Walnut Street, PHILADELPHIA.  
Manufacturers of  
**CURVED, STRAIGHT AND HIPPED**  
Wrought Iron Roof Trusses, Beams, Girders & Joists,  
and all kinds of Iron Framing used in the construction of Iron Roof Buildings.  
**DECK BEAMS, CHANNEL, ANGLE AND T BARS**  
curved to template, largely used in the construction of Iron Vessels.  
**PATENT WROUGHT IRON COLUMNS, WELDLESS EYE BARS,**  
For Top and Bottom Chords of Bridges.  
**Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.**  
**REFINED BAR, SHAPING, and every variety of SHAPE IRON made to Order.**  
Plans and Specifications furnished. Address,  
**SAMUEL J. REEVES, President.**

**The Standard Steel Works.**  
**LOCOMOTIVE AND CAR WHEEL TIRES,**  
Manufactured from the celebrated OTIS STEEL.  
B'RAND  
**STANDARD.**  
Quality and efficiency fully guaranteed. Prices as low as any of the same quality.  
We manufacture  
Heavy and Light Forgings, Driving and Car Axles, Crank Pins, Piston Rods, Etc.  
Works at Lewistown, Pa. Office, 220 S. 4th St., Philadelphia, Pa.

**NAILS**  
**JAS. ROWLAND & CO.,**  
Kensington Iron, Steel & Nail Works,  
290 North Delaware Ave., - - PHILADELPHIA,  
Manufacturers of the  
Anvil Brand Refined Merchant Bar Iron.  
Also, the James Rowland & Co. Kensington Nails, cut from their  
Refined Anvil stock. Also, Plow and Cultivator Steel, Rounds,  
Squares, Flats, Bands and Hoop Iron.  
Correspondence with Dealers solicited.

**PENCOYD IRON WORKS.**  
**A. & P. ROBERTS & CO.,**  
Manufacturers of  
**CAR AXLES.**  
BAR, ANGLE, TEE AND CHANNEL IRON.  
Office, No. 265 S. Fourth St., Philadelphia. Agents for the sale of Glamorgan Pig Iron.

**FOUNDRY FACINGS.**  
  
MANUFACTURERS' FOUNDRY SUPPLIES.  
GERMAN LEAD, BITUMEN, SIEVES, MACHINERY SAND,  
AMERICAN LEAD, ANTHRACITE, SHOVELS, BRASS  
GRAPHITE, CHARCOAL, BRUSHES, CHANDELIER  
PLUMBAGO, MINERAL, CRUCIBLES, STOVE PLATE  
**J. W. PAXSON & CO.** OFFICE & STOREROOMS,  
514, 516 and 518 Beach St., Philadelphia, Pa.

**Iron.**  
PHILADELPHIA.

**H. L. GREGG & CO.,**  
Ship Brokers & Commission Merchants,  
Importers of  
**Old Iron, Metals and Rags.**  
Freight engagements made to all parts of the world.  
Marine insurance effected in reliable offices.  
108 Walnut St., Phila.

**HENRY LEVY.** **F. J. KIMBALL.**  
**LEVIS & KIMBALL,**  
**Manufacturers' Agents**  
For Iron and Steel Rails, Car Wheels, Boiler and  
Sheet Iron and General Railway  
Equipments.  
Old Rails, Axles, and Wheels bought and sold.  
261 S. 4th St., Philadelphia.

**Iron.**

**Edward J. Etting,**  
IRON BROKER AND COMMISSION MERCHANT  
230 S. Third St., Philadelphia, Pa.  
CENTRAL IRON WORKS, - Harrisburgh, Pa.  
**Boiler Plate, Tank Iron, &c.,**  
**PIG, BAR AND RAILROAD IRON,**  
**Old Rails, Scrap, &c.**  
STORAGE WHARF & YARD,  
DELAWARE AVENUE ABOVE CALLOWHILL STREET,  
connected by track with railroad  
Cash advances made on Iron.

**UNION FORGE AND IRON MILLS.**  
**Wilson, Walker & Co.,**  
Pittsburgh, Pa.  
Manufacturers  
**UNIVERSAL MILL PLATES**  
For Bridges, Pipes, &c.  
SHAFTING, DRAWBAR IRON, MERCHANT BAR  
IRON, &c., &c. Also  
**HEAVY AND LIGHT FORGINGS**  
Of all kinds  
FOR CARS, LOCOMOTIVES AND ENGINES,  
Including Drawbars, Axles (either hammered or  
rolled), Driving Axles, Locomotive Frames, Steamboat  
Shafts, Cranks, Propeller Frames, Oil Tool Forgings  
&c. &c.

**The U. S. Iron & Tin Plate Co.**  
OFFICE: 112 Smithfield St., Pittsburgh, Pa.  
WORKS at Demmler Station  
B. & O. R. R., Pgh. Div.  
MANUFACTURERS OF THE  
**Home Made**  
**U. S. CHARCOAL TERNE PLATES,**  
Stamping Iron, Show Card Iron,  
Tappers, Bessemer Steel Plates and  
Shovel Iron.  
Stove Pipe Iron cut to size.  
Special sizes of Pickled and Cold Rolled Iron  
made to order.  
Send for specification and price list.

**The Iron-Masters' LABORATORY.**  
Exclusively for the  
**Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.**  
No. 339 Walnut St., Philadelphia.  
**J. BLODGET BRITTON.**

This laboratory was established in 1866, at the instance of a number of practical Iron Masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

**CHARGES TO IRON WORKS.**

For determining the per cent. of Pure Iron in an ordinary Ore.....	\$4.00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do.....	12.50
For each additional constituent of usual occurrence.....	1.50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.....	7.00
For determining the per cent. of Sulphur or Phosphorus in Iron or Steel.....	7.00
For each additional constituent of usual occurrence.....	5.00
For the per cent. of Carbon, and Lime, and insoluble Silicious Matter in a Limestone.....	10.00
or each additional constituent.....	2.00
or the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal.....	12.50
For determining the constituents of a Clay, Slag, Coke, or of an Ash in Coal the charges will correspond with those for the constituents of an ore.	
For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.	
Printed instructions for obtaining proper average samples for analysis furnished upon application.	

**BOSTON ROLLING MILLS**  
Manufacture  
Extra quality small Rods, from best selected Scrap Iron  
**SWEDISH AND NORWAY SHAPES,**  
Nail and Wire Rods. Also,  
**Horse Shoe Iron, Hand Made**  
**Horse Shoes & the Boston**  
**Horse Shoe.**  
BOSTON ROLLING MILLS, W. E. ELLIS, Treas.  
Office, 17 Battery March St., Boston.

**BRADLEY, REIS & CO.,**  
NEW CASTLE, PA.,  
Manufacturers of every description of  
**PLATE & SHEET IRON**  
OFFICE, at Works.

**Bonnell, Botsford & Co.,**  
**Iron, Nails & Spikes.**  
YOUNGSTOWN, OHIO.

**Spooner & Collins,**  
COMMISSION AGENTS,  
**PIG IRON**  
Blooms, Bar, Sheet & Hoop Iron.  
217 N. Third St., St. Louis.  
**BORAX.**

Concentrated Borax in sacks.  
Selected concentrated Borax in barrels.  
Refined Borax in cases.  
Pulverized Borax in barrels.  
Borax in pound and half pound packages.  
Being Sole Agents for Messrs. Smith Bros., OWNERS OF THE MINES, we are enabled to sell at the lowest prices.  
**WM. T. COLEMAN & CO.,**  
NEW YORK, 40 Pearl Street.  
SAN FRANCISCO, CAL., 107 California and Front Sts.

played on their steamers during the years 1873 and 1875, shows but a slight reduction during the last five years. But the falling off in the business done and profits made by the company is much greater than the reduction in wages of their seagoing men would indicate. It would perhaps be worth while noticing under this head, that the cost of labor is not always determined by the rate of wages. The pay of seamen in France is much more moderate than in England, and yet it costs 25 per cent. more to sail a French ship than an English ship of equal tonnage. The cheaper labor is the more prodigal in its use. The American sailor receives the highest wages and the best rations of any seamen in the world, but he works harder. The average proportion of seamen to an American ship is one man to every 25 tons; while in English ships it is one man to every 15 tons.

**THE LABOR MARKET.**  
Trades unions have endeavored during many years to regulate and equalize the rate of wages. Their want of success is most marked. If we take as an example members of the Amalgamated Society of Engineers—the most powerful of all the unions—we find the average rate of wages for engineers to be: In Lancashire, about 32/ per week; on the Tyne, about 29/ per week; on the Wear (only 12 miles south of the Tyne), 33/ per week; in London, about 40/ per week. Among iron founders we find wages varying in single towns from 24/ to 45/ per week. It is held that a greater degree of uniformity exists in the building trades than in others; and yet the wages of carpenters and joiners vary from 21/6 per week in Hitchfield to £2 in London. The cost of living is much less in Hitchfield than in London; therefore, men are willing to work there for lower wages, for the degree of comfort to be procured by the day's wage bears an important relation to the price of labor. It is a remarkable fact that the great engineering firm of Robert Stephenson & Co., on the Tyne, are paying their men about 7½ per cent. higher wages now than in 1873, while in the chemical trade a falling off equal to 20 per cent. has taken place since 1873. One thing is, however, clear beyond a doubt—the tendency of wages in every department of labor is downward.

Average rates of wages per week paid by the principal manufacturers and others to skilled and unskilled workmen at Newcastle-upon-Tyne, England:

Occupation.	1853.	1869.	1873.	1878.
Braziers.....	28/6	28/6	26/6	30/
Bricklayers.....	24/6	30/	30/	29/
Brickmakers.....	27/9	27/6	35/	33/
Boilermakers.....	31/9	30/6	29/	31/
Carpenters.....	32/	32/	34/10	34/
" ship.....			36/	34/
Foremen.....	34/3	34/6	38/	35/
Grinders.....	27/6	28/10	28/	29/10
Horsehoers.....	28/	29/6	31/	30/
Joiners, pattern makers and sawers.....	24/6	24/5	31/	30/
Painters.....	22/10	23/2	27/	26/
" ship.....			32/	30/
Molders.....	29/	28/6	30/	30/8
Plasterers.....	27/6	29/	30/	29/
" ship.....			34/	36/
Platers.....	33/	34/6	36/	35/
Plumbers.....	28/6	29/	30/	29/
" ship.....			29/	34/6
Riveters.....	29/	29/	34/	32/
Holders-up.....	23/	24/	25/	24/
" ship.....			24/	26/
Saddlers.....	23/	20/3	25/	27/
Sailmakers.....	28/6	25/10	27/5	29/5
Smiths.....	27/6	28/6	30/	29/
Stone masons.....	28/	29/	30/	29/
Strikers.....	28/4	29/4	28/	29/10
Turners.....	20/	21/	24/	23/
Watchmen, night.....	23/	24/	24/	24/
Laborers in shipyards.....	23/	24/	24/	21/
" brickyards.....			24/	21/
* 59 hours per week. † 54 hours per week.				

**COST OF LIVING.**  
The cost of living is considerably less now than it was in 1873, and the tendency of prices in what may be termed "the necessities of life," continues to be downward. The greatest reduction has taken place in fuel. The best house coals may now be bought for from 12/ to 15/ per ton; the prices in 1873 ranged from 20/ to 25/ per ton. The change in the price of groceries, provisions and staple articles in the dry goods or drapery department, is inconsiderable; and in spite of the great importation of American beef and mutton during the last five years, butcher's meats still command the prices of 1873. Should the foreign cattle bill, which is at present receiving the attention of Parliament, become law in its present form, the clause which provides that cattle imported from Continental Europe must be slaughtered at the port of debarkation will probably have a tendency to enhance the price of meat. This stringent clause does not apply to America. Lord Salisbury and other advocates of the bill maintain that a voyage across the Atlantic, occupying say 14 days, will prove an efficient guarantee against disease, as infected cattle would show the plague within that time. The passage of the bill would not only encourage the importation of live stock from our country, but it would give a stimulus to the "dead meat" and "tinned meat" trade, in which we are more deeply interested as exporters than any other people.

**CONDITION OF TRADE.**  
The condition of trade on the Tyne may be stated in a simple sentence. It is in a deplorably bad state. A glance at the following table, which gives the prices of the leading products of this district in May, 1873, and at the date of this report, will show the extraordinary falling off that has taken place during the last five years. Many of the manufacturers of this district are working at a loss.

Chemicals are lower now than they have been at any time since the foundation of the trade on the Tyne. The leading manufacturers are striving to reduce the cost of production; they are making extra efforts to turn out more material, with the same working staff and capacity, than they did in the prosperous times. It is their "last ditch."

During May, 1873, steamers were chartered from the Tyne to New York at 25/ per ton—to take gas coals which then cost 20/ per ton—making the price of coals delivered in New York (freight, insurance and 45/ per ton). Freight to New York have now reached the ridiculously low rate of 4/ per ton, being 1/6 lower than to London. Best Northumberland gas coals may be delivered in New York (price, freight and insurance) for 12/ per ton. If coals were admitted

free of duty, New York and other of our large Atlantic cities might be furnished with fuel at a lower price than London; and the impetus which the abolition of this duty would probably give to our American wheat export trade is at all events worthy of careful consideration. Hopes were entertained that trade would revive when it became known that a Congress for the settlement of the Eastern question was to meet; this has proved groundless. The bountiful harvest which is reasonably expected in the United States is far more likely to bring about better times in Europe than even the permanent and satisfactory settlement of the affairs of Turkey and her provinces.

COMPARATIVE PRICE LIST OF PRODUCTS OF THE TYNE FOR 1873 AND 1878.

Articles.	1873.	1878.
Alkali, white, per ct. per cwt. 0 3/4	0 3/4	0 1 1/4
Alkali..... per ct. per cwt. 0 3/4	0 3/4	0 1 1/4
Bleaching powder..... per ton. 12 10 0	12 10 0	5 0 0
Fire-brick..... per 1000. 3 10 0	3 10 0	2 0 0
Coals, gas..... per ton. 1 0 0	1 0 0	0 8 0
" steam..... per ton. 1 5 0	1 5 0	0 9 6
" canal..... per ton. 1 12 0	1 12 0	0 18 0
Iron, Cleveland Pig, No. 1, pr. tm. 6 7 6	6 7 6	2 2 6
" No. 2, " 6 5 0	6 5 0	2 0 0
" No. 3, " 6 0 0	6 0 0	1 10 0
" No. 4, " 5 10 0	5 10 0	1 18 0
Manufactured bars, ordinary size..... per ton. 13 10 0	13 10 0	5 10 0
Iron, m'f'd bars, best, " 14 0 0	14 0 0	6 0 0
" best best, " 15 10 0	15 10 0	7 0 0
Lead, orange..... per cwt. 1 15 0	1 15 0	1 7 3
" (red) reduced, " 1 3 6	1 3 6	0 18 3
" white, " 1 7 6	1 7 6	1 2 4 1/2
" red (glassmakers) " 1 5 6	1 5 6	1 0 3
Litharge, flake, " 1 4 6	1 4 6	0 19 3
" ground, " 1 3 6	1 3 6	1 3 10 1/2
Paint (white lead)..... per ton. 6 15 0	6 15 0	3 0 0
Soda crystals..... per cwt. 0 2 3/4	0 2 3/4	0 0 1 1/2
" ash..... per cwt. 0 2 3/4	0 2 3/4	0 0 0
bicarbonate..... per ton. 10 0 0	10 0 0	0 0 0
hyposulphite..... per cwt. 15 0 0	15 0 0	9 10 0
Venetian red..... per cwt. 0 7 6	0 7 6	0 4 0

A model of a paper-folding machine recently invented by J. C. Kneeland, of Northampton, is shortly to be built by the Holyoke Machine Co., and the company will probably put the machines on the market in due time. The inventor claims that the machine will fold paper into sheets of any size, from that of the largest news to the smallest note, and that it can be so gauged as to deliver it in whole, half or quarter quires, which process being continued packs it in reams, half reams or quarters. He also says that this machine will do away with the necessity of the hydraulic press, owing to the pressure to which the paper is subjected during the process of folding. Only a wooden model has as yet been made, and the machine company offer to build an iron one at their own risk.

The long-talked-of ship canal to connect Chesapeake Bay with Delaware Bay and shorten the water route from Baltimore to New York and Europe some 225 miles, seems likely now to become a reality. The estimated cost of the canal—17 miles long, 100 feet wide, and 25 feet deep—is \$4,000,000; and the promoters claim that the present commerce of Baltimore would give the canal an income of \$800,000 from the authorized rate of toll, 20 cents a ton. The canal is to follow the valley of the Sassafras, and be without locks. By means of it vessels will be enabled to make three voyages between New York and Baltimore in the time now required for two, and the route will be much safer.

One of the most ancient bridges in the world is that over the Main at Frankfurt, which Goethe called the only structure of importance in that city. It was erected in 1342, on the site of a much earlier structure. Its immediate predecessor, built in 1306, was almost entirely destroyed during a violent flood, and rebuilt by funds raised from the sale of church indulgences. The building of bridges was then considered a religious work, because they enabled pilgrims the better to reach their destinations. It was from the central arch of the bridge that criminals were drowned, and hence, too, the bodies of suicides were cast into the river. The last execution by drowning was in 1613.

Prisoners in Hanover are lodged in airy, comfortable and well-lighted cells, heated by warm air; they can open or shut the windows at will, there is a water-tap and an iron closet with water in each cell and an electric bell communicating with the warden's room. There is an iron bed in each cell and its linen is changed once a fortnight. Prisoners have to bathe once a week in summer and once a fortnight in winter. Three meals a day are allotted, at each of which the prisoner gets half a loaf of bread, with potatoes, milk, &c., for breakfast; meat thrice a week for dinner, with daily potatoes, peas or beans, and for supper rice soup and bacon. The prisoners get 30 per cent. of their earnings on leaving the prison.

The Bureau of Statistics in Berlin publishes a statement regarding the increase of population in Europe. England, Belgium and Saxony showed an enlargement from 1867 to 1875 of from 10 to 13 per cent.; Denmark, Prussia, Italy and Switzerland, from 5 to 8 per cent.; but France only 85-100 per cent. London, Paris, Stockholm, Copenhagen, Brussels, Rotterdam, Bordeaux, Palermo and Vienna showed increases between 1867 and 1871 ranging from 8 to 16 per cent.; Berlin, Frankfurt, Hanover, Stuttgart, Leipzig and Bremen, from 32 to 44 per cent.; and Odessa, Breslau, Dresden, Hull, Antwerp, Leeds, Glasgow and Hamburg, 20 to 34 per cent.

Prof. James Thomson, of England, has recently constructed a machine which, by means of the mere friction of a disk, a cylinder and a ball is capable of effecting a variety of the complicated calculations which occur in the application of mathematics to physical problems. By the simple process of turning a handle an unskilled laborer may in a given time perform the work of ten skilled arithmeticians.

There are about half a dozen engine-bells on the line of the Pennsylvania railroad that are rung by steam. An iron rod is run from the bell to the boiler, and is turned on the same principle as the air-pump, when it is necessary that the bell should be rung, and the steam works the rod to and fro.



## THE BEST KITCHEN AND TOILET WARE.

It is made of  
Purified Sheet Iron  
and Covered with  
a Perfect Glaze  
of Unquestionable  
Purity.



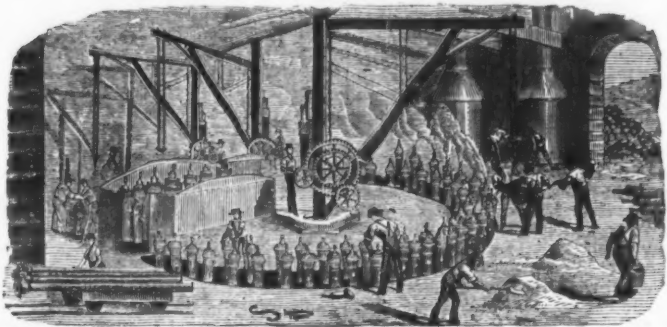
Its Merits have  
been tested and are  
vouched for by the  
Foremost Chemists  
and Experts in the  
Land.

MANUFACTURED ONLY BY THE  
**St. Louis Stamping Co.,** St. Louis, Mo.  
PRICE LISTS, DISCOUNTS AND TESTIMONIALS FURNISHED THE TRADE.

## McNEALS & ARCHER,

BURLINGTON, N. J.

Flange Pipes.



General Foundry Work.

## CAST IRON PIPES

FOR WATER AND GAS.

## Light Castings and Metal Patterns

A SPECIALTY.

### TAYLOR & BOGGIS,

Iron Founders,

Nos. 65, 67, 69, 71 & 73 Central Way, CLEVELAND, O.  
CORRESPONDENCE SOLICITED.

Will make estimates on completed work when desired.



## PATENT Corrugated Bottom COAL HODS, ALSO PATENT Oriental Funnel COAL HODS.

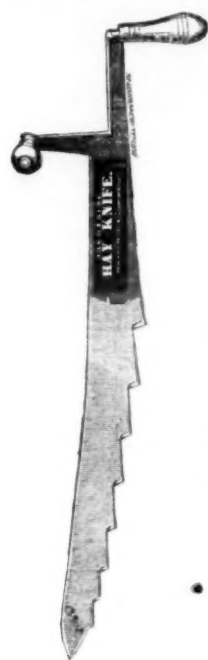
MANUFACTURED BY

### F. HABERMAN,

No. 204 Pearl Street, - - NEW YORK.

ALSO MANUFACTURERS OF

## TIN WARE.



## LIGHTNING HAY KNIVES,

WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

### Hiram Holt & Co.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

SEMPLE & BIRGE MFG. CO., Agents at St. Louis.

## "WROUGHT BUTTS."

SEND FOR PRICES TO

**The McKinney Mfg. Co.,** (Works, Allegheny City, Pa.  
P.O. Address, Pittsburgh, Pa.)

## Southern Advertisements.

## Southern States Coal, Iron & Land Co.

LIMITED,

ENGINEERS, IRON FOUNDERS & BOILER MAKERS,  
Coal Miners and Fire Brick Manufacturers.

The Only Makers in the Southern States of

WASHED FOUNDRY COKE,

Free from Slate and Sulphur.

Machine-Made Brick, Limestone, Lumber and Shingles.

FARMS TO LET.

Apply to the HEAD OFFICE, South Pittsburg, Tennessee.

### W. A. HOSKINS,

DEALER IN

## MINERAL LANDS,

Chattanooga, Tenn.

Offers for sale, at very low figures, some of the most valuable Charcoal and Coke Properties within the district. Full particulars furnished on application.

## Vulcan Iron & Nail Works,

Chattanooga, Tenn.,

MANUFACTURERS OF

BAR IRON, NAILS, RAILROAD SPIKES, FISH BARS AND BOLTS BRIDGE  
AND CAR BOLTS, AND FORGINGS GENERALLY.

## ROANE IRON COMPANY,

Manufacturers of and Dealers in

### Pig and Railroad Iron.

CHATTANOOGA, - - - - - TENN.

## WASON CAR & FOUNDRY COMPANY,

Chattanooga, Tenn.,

Manufacturers of

RAILWAY FREIGHT CARS, Car Wheels and Castings.

## TENN. COAL & RAILROAD COMPANY,

A. M. SHOOK, General Manager, - - Tracy City, Tenn.

Proprietors of the Sewanee mines, capacity of 5,000 bushels of coal and coke per day. Several important institutions of learning, including the University of the South, also the celebrated Beersheba Springs, are located upon the line of this Railroad.

Being also the proprietors of several extensive tracts of very fine lands, offer special inducements to colonists. Communications addressed to the General Manager will receive prompt attention.

### T. J. BROWN,

Rockwood, Tenn.

Miner and Contractor of  
Fossiliferous Ores.

A superior article delivered at low figures at any  
turnout within the district or at any point on the  
Ohio River. Refer to Roane Iron Co., Chattanooga  
Iron Co., or S. B. Lowe, Chattanooga.

### S. Whinery, Civil Engineer,

CHATTANOOGA, TENN.

Late Division Engineer Cincinnati Southern Railway.  
Will prepare plans and superintend construction of  
Bridges, Buildings, Roofs, Roads, Streets, Water  
Works, Sewers, Canals and other public works. Ex-  
aminations, location and construction of railway  
lines a specialty. Surveys, examination and reports  
made of mineral lands. Business attended to  
thoroughly and promptly. First-class references given.

### S. B. LOWE,

Pig Iron, Storage &  
Commission.

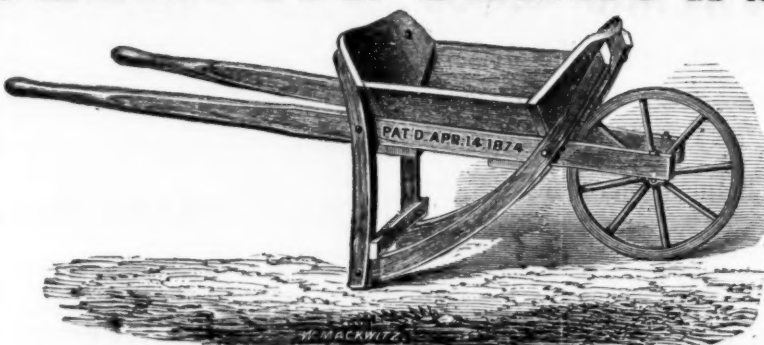
Dealer in Charcoal and Coke Pig Iron for Foundry,  
Forge or Car Wheel purposes.

Chattanooga, Tenn.

### GEORGE W. BRUCE,

No. 1 Platt St., New York,  
Agent for CLEMENT & MAYNARD,  
Great inducements offered in their Superior Shovels,  
Sieves and Scoops and Trowels, as well as Hoes. A  
large stock on hand.

## CHAMPION BARROWS.



A first-class article and a specialty, that will make a demand in any market and afford a good margin for dealers. We are prepared to furnish them in large quantities. Manufactured by

**BRYAN MANUFACTURING CO.,** Bryan, O.  
**SEMPLE & BIRGE MFG. CO.,** Sole Western Agents, ST. LOUIS, MO.  
For Sale by THE NEW YORK PLOW CO., General Eastern Agents, 55 Beekman St., New York.

## STANDARD NUT CO.,

Pittsburgh, Pa.,

MANUFACTURERS OF

### HOT PRESSED

### Square & Hexagon Nuts,

R. R. FISH BARS,

BOLTS,

SPIKES,

RIVETS, &c.

## IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

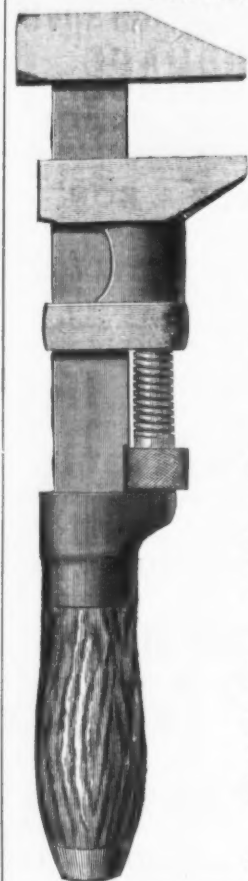
Gun, Pistol, Wrench Bars, &c. Also, Die Sinking. Manufacturers also of  
Bricklayers', Moulders' and Plasterers' Tools, Saddlers'  
Round and Head Knives.

**WILLIAM ROSE & BROS.,**

30th & Filbert Sts., West Philadelphia.

## STANDARD GIRARD WRENCH.

WARRANTED.



FOR  
STRENGTH  
AND  
Durability  
IT HAS  
NO SUPERIOR.

GUARANTEED  
IN  
EVERY RESPECT.

Wrought Bar, Head  
and Screw.

Owing to the in-  
creased demand  
for these justly  
Popular Wrenches,  
we are now manu-  
facturing more than  
any other establish-  
ment in the world.

Our Wrench hav-  
ing been imitated by  
other manufactur-  
ers, we have adopt-  
ed the above Trade  
Mark, and will here-  
after stamp all our  
goods.

SEND FOR  
TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

## PATENT CONVEX Fluting & Smoothing Iron.

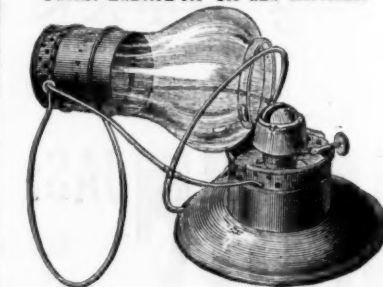


1st. It can be used as an ordinary Smoothing Iron.  
2d. It is a Fluting Machine as well as a Smoothing  
Iron. 3d. The Fluting Attachment being made of  
brass, and convex in form, it has all the advantages  
of the crank machine. 4th. It combines the two  
articles in one, taking up the room of but one ma-  
chine, and is always ready for use.

A. A. WEEKS, Manufacturer,

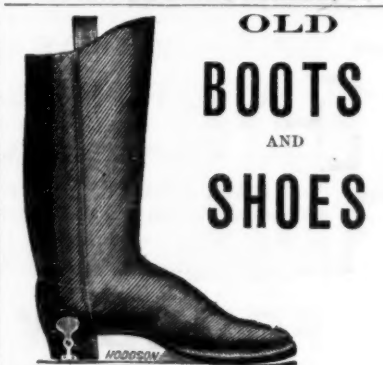
No. 82 John Street, New York.

### Patent Lantern for Oil and Kerosene.



This Lantern is the most salable in the market;  
it burns Kerosene or Oil with superiority. The  
flame is regulated from the outside. The globe is  
removable. It is neat, Cheap, handy, compact  
and durable. It has more advantages than higher  
priced Lanterns. SEND FOR PRICE-LIST.

**N. DUBRUL & CO.,**  
Manufacturers of Lanterns,  
441 & 443 Plum St., Cincinnati, O.



## OLD BOOTS AND SHOES

Can be Straightened  
AND NEW ONES KEPT STRAIGHT  
BY USING

### LYON'S PATENT Metallic

### HEEL STIFFENER.

Send for a new Illustrated Price List for 1878.

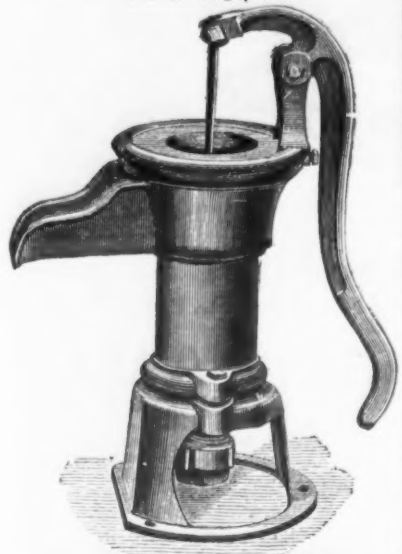
**N. LYON,** Sole Manufacturer,  
ALBANY, N. Y.

## Stove Repairs.

Repairs for Stoves made at Troy, Albany, Rochester,  
Cleveland, Buffalo, Boston, St. Louis, Quincy, Chicago,  
Milwaukee and elsewhere, at  
W. C. METZNER,  
127 W. Randolph St., CHICAGO, ILL.



The Largest Pump Works in the World.  
Over 800 Different Styles.  
**PUMPS, STEAM PUMPS, ROTARY  
PUMPS, CENTRIFUGAL PUMPS,  
PISTON PUMPS,**  
Tanners, Paper Mills, Fire Purposes, suitable for all  
situations imaginable.



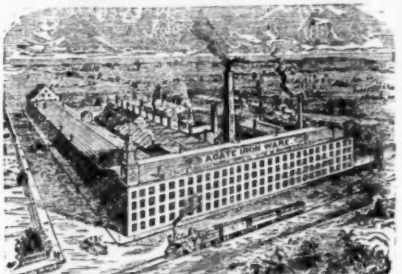
Also, **HAND FIRE ENGINES.**  
Send for Catalogue. Address,  
**RUMSEY & CO.,**  
Seneca Falls, N. Y., U. S. A.  
Branch House, 93 Liberty Street, N. Y.  
MARCUS C. HAWLEY & CO., San Francisco and  
Sacramento, Cal. General Agents for the Pacific Coast.  
JUSTUS SCHMIDT, Agent, Hamburg.  
**L. M. RUMSEY & CO.,**  
Branch House, 311 N. Main St., St. Louis, Mo.

**AGATE IRON-WARE**  
PATENTED  
May 30th, 1876, Feb. 27th, 1877, July 3d, 1877.



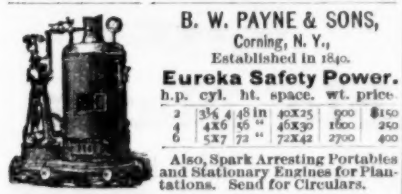
The absolute Purity and Safety of  
Agate-Iron-Ware is certified to by the  
following eminent Chemists:

R. OGDEN DOREMUS, M. D., LL.D., of College of the City of N.Y.  
R. SILLIMAN, State Chemist, Yale College, New Haven, Conn.  
HERBERT G. TORREY, U. S. Assayer, Office, 20 Wall St., N. Y.  
S. C. EATON, M. D., Analytical Chemist at U. S. Assay Office.  
S. DANA HAYES, State Assayer and Chemist, Boston, Mass.  
HENRY MORTON, Pres. Stevens Inst. of Technology, Hoboken, N.J.  
EDWARD S. WOOD, Prof. Chem., Harvard Med. Coll., Boston, Mass.  
WM. RIPLEY NICHOLS, Prof. Gen. Chemistry, Boston, Mass.  
BOOTH & GARRETT, Practical & Analytical Chemists, Philadelphia.



Price Lists and Discounts will be sent only to  
the Trade, on application.

**LALANCE & GROSJEAN MFG CO.,**  
P.O. Box 301, 89 Nassau St., New York.



**HOWSONS'**  
OFFICES FOR PROCURING  
**UNITED STATES AND FOREIGN  
PATENTS,**  
Forrest Buildings,  
119 SOUTH FOURTH ST., PHILADELPHIA  
AND MARBLE BUILDINGS  
605 Seventh St., (Opposite U. S. Patent Office),  
Washington, D. C.  
H. HOWSON, Solicitor of Patents. C. HOWSON, Attorney at Law.  
Communications should be addressed to the  
PRINCIPAL OFFICES, PHILADELPHIA.

For  
European  
and  
German  
Patents  
apply to  
**Lenz & Schmidt**  
Patent Attorneys,  
78/79 Dorotheenstr.  
BERLIN.

**PATENTS.**  
THOMAS D. STETSON, 23 Murray St., N. Y.,  
Patent Solicitor and Expert.

**W. & B. DOUGLAS,**  
MIDDLETOWN, CONN.  
The Oldest and Most Extensive Manufacturers of  
**PUMPS.**  
**HYDRAULIC RAMS,**  
**GARDEN ENGINES**  
Yard Hydrants, Street Washers.  
AND OTHER  
**Hydraulic Machines**  
IN THE  
WORLD.  
Awarded the GRAND MEDAL of PRO-  
GRESS at WORLDS' EXPOSITION, VIEN-  
NA, 1873, being the highest awards on  
Pumps, &c., also, highest medal at PARIS  
in 1867, and Philadelphia, 1876, accom-  
panied by Report of Judges.  
Descriptive Catalogues and Price Lists sent when requested.  
BRANCH WAREHOUSES,  
85 & 87 John Street, N. Y.  
AND  
197 Lake St., CHICAGO, Ill.

**UNION MANUFACTURING COMPANY,**  
Manufacturers of all styles Plain and Ornamental Bells,  
**LOOSE PIN REVERSIBLE,**  
**Cast Fast & Loose**  
Drilled and Wire Jointed.  
Japanned, Figured, Enamelled, Nickel Plated  
and Real Bronze Bells. Also a full line of  
**IRON & BRASS PUMPS,**  
Garden, Well, and Force Pumps, Yard, Drive  
Well, Garden Engine and Steam Boiler Pumps,  
Hydraulic Rams, &c., and all with the most modern  
improvements.  
**Centennial Spring Hinges.**  
This Hinge has two flat coil  
springs, very powerful. It has a heavy  
solid pintal, giving much less fric-  
tion than a hollow pintal. It has  
broad, solid bearings in the knuckle,  
which do not wear down readily and  
let the door sag. It is Fast Joint,  
therefore can be used for either right  
or left hand. By actual test it has an  
average of 50 per cent. more power  
than other Spring Hinges in common  
use of same size.  
Fine Castings a Specialty.  
**NEW BRITAIN, CONN.**  
Warehouses,  
98 Chambers St., N. Y.  
37 Kilby St., Boston, (Pumps.)  
Heaton & Denckla, 507 Com-  
merce St., Phila. (Bells.)  
Send for Illustrated Catalogue and  
Price List.

**THE IMPROVED  
HOWE SCALES**  
In Competition with the World at Philadelphia, 1876.  
**TWO FIRST MEDALS, and TWO DIPLOMAS OF MERIT**  
The following are the points that the Judges officially announce as the basis of their award of the  
highest honors to the Howe Scales:  
1st. For their Protected Bearings (the Howe is the only Scale with Protected Bearings), which makes  
the Scale **DURABLY ACCURATE.**  
2d. For their Strength.  
3d. For their Simplicity.  
4th. For their Economy in Construction.  
5th. For their first-rate Material and Workmanship.  
6th. For their various original Improvements and Adaptations (which being patented are exclusively  
possessed by the **HOWE**).

**The Improved Howe Scales**  
MADE BY THE  
**HOWE SCALE COMPANY, of Rutland, Vt.,**  
Are Guaranteed Superior to all others.  
For Plans, Prices and other information, address,  
**A. M. GILBERT & CO.,** 95 to 101 Lake St., Chicago; 116 Main St., Cin-  
cinnati; 157 Water St., Cleveland, O.; 612 N. Third St., St. Louis.  
**PRIEST, PAGE & CO.,** 325 Broadway, New York.  
213 Market St., Philadelphia.  
145 Franklin St., Boston.  
63 Wood St., Pittsburgh.  
**M. C. HAWLEY & CO.,** 201 & 203 Market St., cor. Main, San Francisco, Cal.  
San Francisco, Cal.  
Portland, Oregon.  
**FROTHINGHAM & WORKMAN,** Montreal, Canada.

**YALE LOCKS.**  
**UNITED STATES LOCKS.**  
(SHEPARDSON PATENT.)  
Manufactured only by the  
**YALE LOCK MFG. CO.**  
OFFICE AND WORKS  
Stamford, Conn.  
SALESROOM:  
No. 53 Chambers St., N. Y.

American and English Railways.

The Railway World says: English Board of Trade returns give an account of the operations of the railways of the United Kingdom in 1877, shortly after the publication of Poor's Manual of the Railroads of the United States for 1878, containing the best attainable corresponding statistics relating to the railway operations of this country during last year. An opportunity for contrast of the leading features of these two systems during an approximately contemporaneous period is thus presented:

The capital paid up on the English lines was £774,059,048, or in round figures \$3,370,295,240, while the total capital account of the American lines was reported to be \$4,806,201,022, but it is noticeable that of the latter sum less than one-half, or \$2,313,278,598 consists of capital stock, the remainder being made up of \$2,255,318,650 funded debt, and \$237,604,764 of other debt, making an aggregate indebtedness representing a considerably larger sum than the capital stock, while on the English lines over \$2,000,000,000 was made up of ordinary, guaranteed and preferential stock, only about \$144,000,000 of loans, and about \$715,000,000 of debenture stock. In other words, a much larger proportion of the money required to construct the railways of Great Britain, and carry them safely through their stages of infantile impecuniosity, was advanced by stockholders depending for their returns solely upon the success of the respective lines than has been common in the United States. This difference is especially noticeable, if the general belief is correct that a large portion of the sum figuring in the railway returns of this country as capital stock did not consist of cash advances.

The contrast between the cost of the railways of the two countries is still more remarkable. The length of the railways of the United Kingdom at the end of 1877 was 17,077 miles, of which 9235 were double, and 7842 single track. The reported length of railways of the United States was 79,208 miles, with an additional length of sidings and double tracks of 18,099 miles. The aggregate cost per mile of line opened in the United Kingdom at the end of 1877 was £39,472, or, in round figures, \$167,360, while the aggregate cost of the United States railways and their equipments is set down in Poor's Manual at \$4,180,191,727, or the average cost per mile of \$52,792. The English railways, therefore, cost only a little less than four times as much as the railways of this country.

Notwithstanding these large expenditures, it is reported that the English companies continue to expend large amounts of additional capital in improving their existing lines, a fact illustrated by the statement that while in 1877 they had only 205 miles more than in 1876, there had been from the latter year to the former an increase of paid-up capital amounting to about \$80,000,000. It is by no means probable that this expenditure is unwise, and the fact that it is made in England, notwithstanding the care bestowed upon the original construction of her great lines, furnishes a sufficient justification and explanation of the corresponding expenditures made upon the American lines over which large traffic is conducted, and which in response to the exacting requirements of an enlarging business and the modern demands for fast speed, additional safeguards, superior terminal facilities, commodious depots and improved mechanical appliances of various descriptions, have been obliged to make large outlays which are sometimes unjustly condemned by ignorant or capricious critics.

It is one of the popular fallacies of the day that all of the great railways of this country could be duplicated or supplanted by lines costing only a small fraction of the sum expended in their construction, but those who are prone to indulge in this sanguine calculation overlook the innumerable supplementary expenditures, often far exceeding in magnitude the original cost, which every important railway company must make before it can be fully equipped for the transaction of a large freight and passenger business in a satisfactory manner. Nearly \$200,000 per mile has been expended on the English roads, and this should admonish all whom it may concern of the impossibility of at all times avoiding large new expenditures here upon the lines and equipments of our old roads.

The gross revenue from all sources of the English railways in 1877 was £62,973,328, or \$314,866,640, while the gross earnings of the American railways in 1877 are reported at \$472,999,272. There is comparatively little difference in the two countries in the proportionate relation between gross revenue and capital account. The contrast between the net earnings of the two countries is much more marked, on account of the high percentage of working expenditure in this country. In England, in 1877, this was £33,857,978 (\$169,289,890), or 54 per cent. of the total receipts, while the working expenses of all the United States railways in 1877 was reported to be \$301,832,575, or an average of about 64 per cent. of the gross receipts. There are several important causes for this marked difference. By the liberal expenditures on the English roads they doubtless secure an economy of movement not yet attainable on a number of the poorly constructed and incomplete railways of this country, and many English roads obtain for a given class of service much better rates than those the American railways have been enabled to enforce during the last few years of industrial and financial depression.

Another point of contrast conducive to favorable financial results in the United Kingdom is that the receipts of the railways in 1877 exceeded by more than \$3,000,000 the receipts of 1876, while in the United States there was a falling off in gross earnings last year, as compared with the previous year, of more than \$24,000,000, a decline attributable mainly to a diminution in rates.

Another marked difference in the railway system of the two countries arises from the fact that in England the receipts for passenger service formed 42.13 per cent. of the total receipts, and the receipts for conveying freight 54.17 per cent. of the total re-

ceipts, the sums being £26,534,110 for passenger service and £34,109,848 for freight service, while in the United States in 1877 the earnings were: From freight, \$342,859,222, or more than 72 per cent., while the receipts from passengers were only \$130,050,050, or but a little more than 27 per cent. of the gross earnings; and one of the fortunate features of the English railway system is, that the number of passengers carried is steadily and rapidly increasing, while in this country, under the pressure of hard times, passenger travel on many of the American roads declined rapidly during the last few years.

This tendency will doubtless be steadily counteracted by every influence that tends toward the restoration of national prosperity, and it is also to be hoped that the numerous efforts made to secure fairly remunerative rates for freight service will at least be crowned with a moderate degree of permanent success.

**The Monitor, Ohio, Furnace.**—On the first of January last Messrs. Newcomb & Whitman entered a lease which gave them the privilege to run Monitor, Ohio, Furnace (for several years in litigation) for the period of one with the refusal of another year, for the purpose of making cold-blast charcoal iron. The furnace, situated on the Ohio River Bank opposite Ashland, is a 50-foot iron shell, whose arches are now put up in brick masonry, which hides from view the columns supporting the shell for some purpose. The distance across the boshes is 11 feet. The charging was done until Saturday last through a 6-foot (42-inches in diameter) thimble. But the inwall, which a little distance below the foot of the thimble was bulging outwardly considerably, and thus creating an accumulation and combustion of a part of the charcoal in that region, burning the thimble, &c., was drawn in in the early part of this week to a continuous straight line of a reduced diameter, admitting of the use of a 30-inches diameter thimble, which will likely prove an advantage to the further working of the furnace, especially as regards an economical utilization of fuel and a uniform make. One 2½-inch tuyere supplies the blast of an average 2½-pound pressure to the furnace. The horizontal engine is 26 inches in diameter, with a 5-foot stroke connected with two blowing cylinders of like stroke and a 42-inches diameter; the usual speed of the engine is 21 revolutions per minute. Two 40 inches by 44-feet boilers are placed at the top of the furnace. The average make during the present blast, which commenced on the 13th of May and will last to the after part of November, has been so far from 7 to 7½ tons per day, and the iron is giving such general satisfaction that it is sold faster than it can be made.

**Chinese Miners Making a Stand.**—The Nevada City Transcript of Tuesday publishes the following: Not long since the superintendent of an extensive mining company in this county was the recipient of a peremptory written order from a large number of white men in his neighborhood to discharge every Chinaman in his employ immediately, or else there would be trouble. The demand of the white laborers is said to have been couched in terms that implied the Mongolians would be driven away from the mine at the point of guns if they did not leave peaceably. The superintendent, a man of pluck and rather averse to being subject to dictation, at once supplied the moon-eyed force with fire-arms, and told them what was in the wind. It did not require much "bracing up" from him to inspire them with the necessary courage to repel an onslaught on their rights, for these quiet-looking Celestials will fight like so many tigers under such circumstances. Then he sent back word to the white warriors that if they wanted the Chinese miners to go, to come over to the mine and drive them away; that he had an army now capable of protecting itself against any mob; and that if the "dictators" (as he calls them) made up their minds to enforce their threats, he would advise them to purchase coffins and will away their property before coming forth to battle. This was several days ago, and nothing more has been heard from the white men. In the meantime, the superintendent's "volunteers" work with their guns by their sides, and keep their weather-eye open for hostile demonstrations of any kind.

Among the ancient literature regarding Cyprus which the English have raked out of comparative obscurity is the Cosmographe of Peter Heylyn, published in 1652, in which the island is called "hot and swelthy, the soyle moistened with some few brooks," yet so often dried up that "in the reign of Constantine the Great this island was for thirty six years together utterly forsaken, no rain falling all that time." Yet it is stored with "plenty of all things—wine, oil, corn, sugar, cotton, honey, wool, turpentine, alum, verdigris, all sorts of metals, store of salt, programs and other commodities, whereupon this island was called Macaria, i. e., happy." The following is one of the most noteworthy passages of the old chronicle: "The people hereof are warlike, strong and nimble; of great civility, hospitality to their neighbors, and love to strangers of all nations, Jewes only excepted. For in the Empire of Trajan the Jewes inhabiting Egypt and the adjoining countreys drew themselves together, and chose one Alexander for their captain, under whose conduct they entered into this island, and laid it desolate, killing in it 240,000 persons of all sexes and ages; not without much bloodshed vanquished and slain by Lucius, the emperor's lieutenant. Since which time the Cyriots permit no Jew to enter into the island; but come he hither voluntarily, or by force of of tempest, they lay hands on him, and lead him presently to execution. A hated nation, that neither innocence can protect or equity relieve from that cruel custome."

One of the objects of president Garretts present visit to England is reported to be the establishment of a line of steamships between Baltimore and Barrow.





# USE THE BEST.

## NEW



THE NEW AMERICAN FILE COMPANY have the exclusive right to use the Bernot process for cutting Files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing Files and Steel.

**NEW AMERICAN FILE CO., Pawtucket, R. I.**

**AUBURN FILE WORKS,**  
Superior Hand-Cut  
**FILES AND RASPS,**

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.  
**FULLER BROS., Sole Agents,**  
89 Chambers and 71 Reade Streets, N. Y.

Granted for



**McCAFFREY & BRO.,**  
Pennsylvania File Works,  
Fourth St., north of Columbia Ave., Philadelphia, Pa., U. S.

Superior Goods.

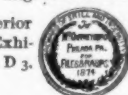


Silver Medal.



Domestic and foreign buyers who are desirous of handling a superior File or Rasp should send us their orders. Gentlemen visiting the Exhibition Universelle in Paris are invited to examine our exhibit at D 3, American Section.

Highest Premium.



**Steam and Frost prevented on Show Windows.**



**REVOLVING VENTILATORS**

For everything (and every size), from a hat or cap to an exhibition building. Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, size six inch diameter, \$1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

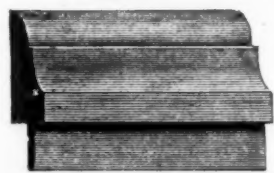
Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

Prof. A. L. LOOMIS, M. D., University of City of New York, writes as follows: "From my personal experience and that of my patients who have used your Ventilator during the past six months, I am convinced that your method of removing dust, impurities and dampness from the atmosphere is the best which has as yet been proposed. By it the air in an apartment can be constantly changed without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nurseries and school rooms."

Air Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply steam filtered air. Prices and discounts to the trade sent on application.

The "Economy" Molding Weather Strip is perfect in every respect. By enlarging edge of rubber or felt, and making slot in molding to correspond (see engraving), we save all after expense of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed by taking old piece out of either end of molding, and sliding in a new piece. By this method of securing rubber all uncertainty of fastening or undoing of glue or tacks is overcome. Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Mouldings, &c., and thus make perfect Weather Strips.

No. 6.



**BRACHER VENTILATOR CO., No. 3 Park Row, New York.**



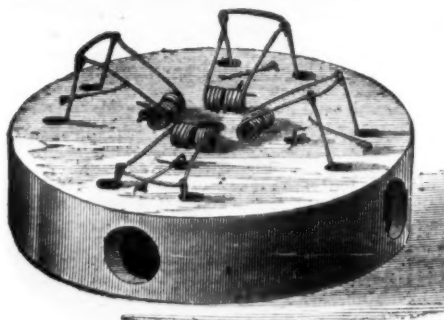
**Extension Cylinder Night Latches.**

**KING'S PATENT, June 26, 1877.**

Cylinders adjustable for doors from 1 1/4 inch to 2 inches.

**FRANCIS MANY,**  
143 Chambers St., New York.

"Common Sense"



**MOUSE TRAPS,**  
For Home and Export Trade.

**BEST IN MARKET.**  
**RIPLEY MFG. CO.**

Unionville, Ct., U. S. A.,

Manufacturers of

House Furnishing Hardware.

**FILES & RASPS,**

Best Cast Steel.

**HAND-OUT. Manufactured by**  
**JOHNSON & BRO.**  
No. 1 Commercial Street, Newark, N. J.

ESTABLISHED 1865.

**Chas. Spruce & Co.,**  
Manufacturers of **HAND CUT**  
**FILES AND RASPS.**

Every File warranted.  
**CHALMERS & MURRAY,**  
Sole Agents, 76 Reade St., New York.

**SPENCER & UNDERHILL,**

94 Chambers St., N. Y., Agents for

American Screw Co.'s Wood, Machine and Rail Screws, Stove and Tire Bolts, Rivets, &c.  
**O. Ames & Sons,** Shovels, Spades and Scoops.  
**A. Field & Son,** Tacks, Brads, Nails, &c.  
**G. F. Warner & Co.,** Carriage Clamps.  
We have also on hand a general assortment of Hardware



**THE GIANT PAD LOCK.**

Manufactured by

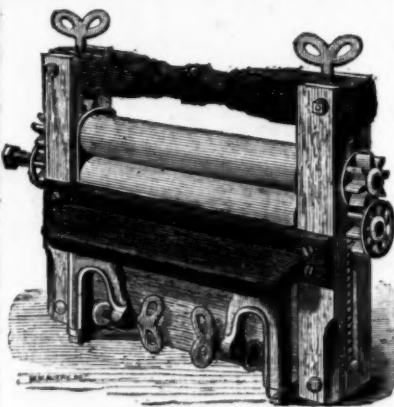
**THE SMITH & EGGE MFG. CO.**

(Centennial Award.)

"Superior in Every Respect."

This is one of the best selling Locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited. Address as above.  
Lock Box 105, Bridgeport, Conn.

**Keystone**  
**CLOTHES WRINGERS.**



**Wood Frame Cog-Wheel Wringers.**

No.	Size of Rolls.	Price per doz.
10	10x1 1/2	\$60.00
12	10x1 3/4	65.00
15	11x1 3/4	68.00
18	11x1 7/8	71.00

**Wood Frame Friction Wringers.**

No.	Size of Rolls.	Price per doz.
1 1/2	10x1 1/2	\$51.00
1	10x1 3/4	54.00
3	11x1 3/4	62.00

**Self-Adjusting Iron Frame Friction Wringers.**

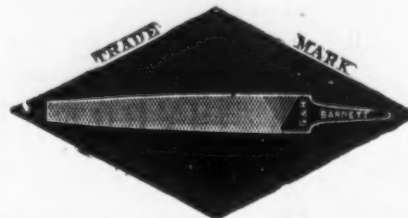
No.	Size of Rolls.	Price per doz.
2 1/2	10x1 1/2	51.00
2	10x1 3/4	54.00
4	11x1 3/4	62.00

**EVERY WRINGER WARRANTED.**

Special rates given for export. Send for price list of other goods for home and export trade.

**F. F. ADAMS & CO.,**  
Erie, Pa.

# Black Diamond File Works.



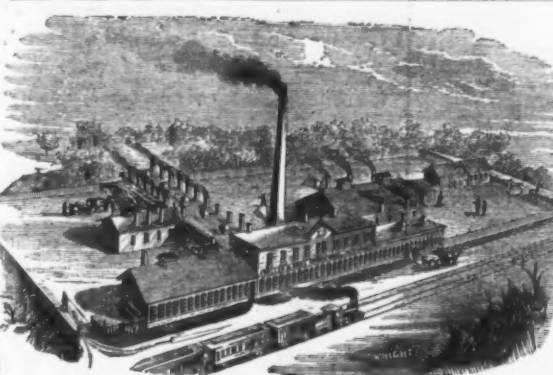
Awarded by Jurors of Centennial Exposition, 1876, for  
"VERY SUPERIOR GOODS."

**G. & H. BARNETT,**

39, 41 & 43 Richmond St., Philadelphia.

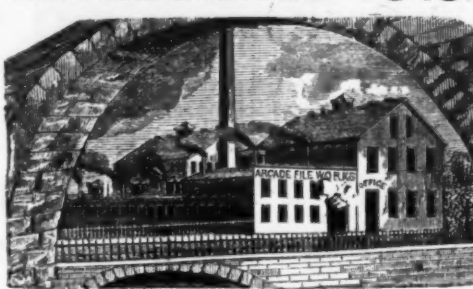
**CHARLES B. PAUL,**  
Manufacturer of **HAND CUT FILES.**

Warranted **CUT STEEL.** 187 Tenth Street, Williamsburg, New York.  
All descriptions of Files made to order. Price List mailed on application. Established 1863.



**HELLER & BROS.,**  
Newark, N. J.,  
Manufacturers of Celebrated  
American Hand-Cut Horse Rasps  
and Files.  
For Sale by Iron and Hardware Dealers generally.

**ESTABLISHED 1848.**



**C. T. DRAPER & CO.**  
Sole Sing. N. Y.  
Manufacturers of **SUPERIOR**  
**HAND CUT**

**FILES and RASPS**  
Made from Best  
**ENGLISH CAST STEEL.**  
Quality guaranteed by written warranty when required.

**AUSABLE HORSE NAILS**  
POLISHED OR BLUED.  
**HAMMERED AND FINISHED**



**The Ausable Nails**

Are Hammered Hot,

And the Finishing and Pointing are  
Done Cold,

Thus Imitating the Process of Making Nails by Hand.

Quality is **Fully Guaranteed.**

For Sale by all Leading Iron and Hardware Houses.

**ABRAHAM BUSSING, Secretary,**

4 Warren Street, New York.

The only **GENUINE D. R. BARTON Tools**

ARE MADE BY

**THE D. R. BARTON TOOL CO.,**

Cor. Mill and Furnace Streets,

ROCHESTER, N. Y.

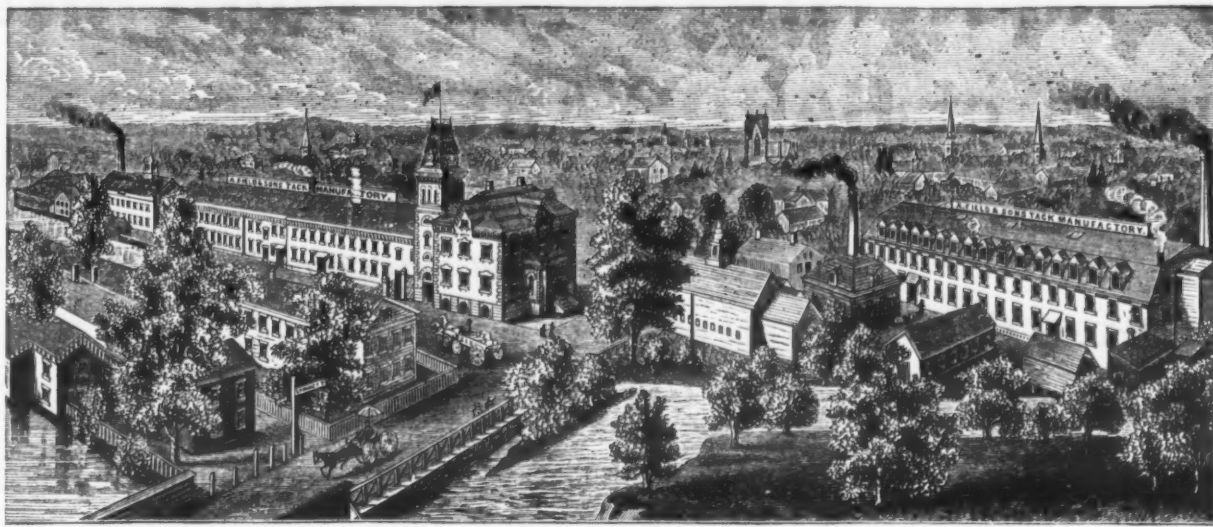
AGENCIES:

**HEATON & DENCKLA,** 507 Commerce Street, Philadelphia, Pa.  
**H. O. STRATTON,** 33 Oliver Street, Boston, Mass.  
**HUNTINGTON, HOPKINS & CO.,** Sacramento.  
**NATHAN WEED,** 4 Gold Street, New York.



# A. FIELD & SONS,

## TAUNTON, MASS.



MANUFACTURERS OF

## TACKS OF ALL KINDS.

Shoe Nails, Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks, Glaziers' Points, Etc.

OFFICES AND FACTORIES AT TAUNTON, MASS. WAREHOUSE AT 78 CHAMBERS STREET, N. Y.,

where may be found a full assortment of Tacks, Brads, &c., for the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above-named goods made from samples to order.

## Hoisting Machinery

MANUFACTURED BY  
CRANE BROTHERS MFG. CO.,  
Chicago.

### The Upright Family Scale

PATENTED.



With Tin Dish.  
Weighing 12 lbs.  
by 1/4 lb.

List \$16 per  
Dozen.

Liberal Discount  
to the Trade.

This Scale has an  
attachment for  
Taking the  
Tare. Just the  
thing for family use.

Manufactured by  
JOHN CHATILLON & SONS,  
89, 91 and 93 Cliff St., NEW YORK.

Geo. M. Eddy & Co.,  
351 & 353 Classon Ave., Brooklyn, N. Y.  
Manufacturers of

## MEASURING TAPES.

Of Cotton Linen and Steel.  
For all purposes for which Tape Measures are required.  
Only manufacturers of

Paine's Patent U. S. Standard Steel  
Measuring Tapes,

Pat. Spring Measuring Tapes  
of Linen and Steel.  
FINE TEMPERED STEEL BAND SAWS,  
From 4 inch wide upward. Warranted tougher than  
any other Band Saw. Catalogues on application

## PRIZE MEDALLISTS:

London, 1862; Oporto, 1865; Dublin, 1865; Paris,  
1867; Moscow, 1873; Vienna, 1873, and only  
Award and Medal for Self-Coiling Steel  
Shutters at Centennial Exhibition,  
Philadelphia, 1876.

## CLARK & CO.,

ORIGINAL INVENTORS AND SOLE

PATENTERS OF

## Noiseless Self-Coiling Revolving STEEL SHUTTERS,

FIRE AND BURGLAR PROOF.

Also Improved

## Rolling Wood Shutters

Of various kinds. Clark's Shutters are the Best  
and Cheapest in the world. Are fitted to new  
Tribune Building, Lenox Library, Delaware and Hud-  
son Canal Co.'s Building, Transatlantic Steamship  
Co.'s new Dock, American News Office, &c., Posey  
County Court House, Mt. Vernon, Holt County  
Court, Oregon, Mo. Also to buildings in Boston,  
Cincinnati, Detroit, Janesville, Wis., Baltimore,  
Canada, &c. Have been for years in daily use in  
every principal city throughout Europe, and are in-  
dorsed by the Leading Architects of the  
World.

Office and Manufactory,

162 & 164 West 27th Street, N. Y.

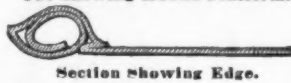
## ANSONIA CORRUGATED STOVE PLATFORM

Manufactured by the

Ansonia Brass & Copper Co.  
Office, 19 & 21 Cliff Street,  
NEW YORK.



Cut Showing Round Platform.



Section Showing Edge.

## ANSONIA Bronzed Fire Screen,

With Ornamented Mouldings.

PATENT APPLIED FOR.

The Portable Bronzed Fire Screen or  
Shield, as shown in the illustration, is especially  
designed for the safety and protection of walls, fur-  
niture, woodwork, paper or varnish from heat.  
Being constructed of metal, with firm and substan-  
tial edges, curved in form to stand alone, it may be  
easily adjusted to any position about a stove, before  
a grate or fire place. The demand for something  
useful, durable and ornamental as a Fire Screen has  
long been felt, and having finally accomplished the  
desired result, we are prepared to fill all orders  
promptly.



## CHAINS UNION CHAIN WORKS, REITER & MORTON, Pittsburgh, Pa.,

Manufacture all kinds of

Coil, Cable, Crane, Railroad, Wagon and Agricultural Chains,  
From Best Standard Brands of Iron.

Our Chains are all thoroughly tested and warranted, and will be found equal to the  
best of either home or foreign make.

Prices the very Lowest.

## BROWN & SHARPE MFG. CO

Providence, R. I.,

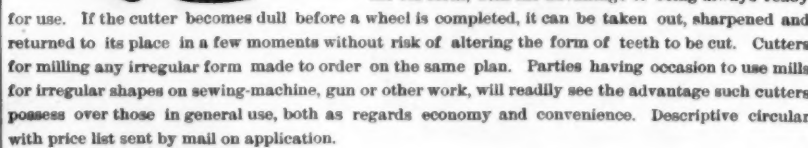
MANUFACTURERS OF

## MACHINERY & TOOLS.

Gears Cut and Index Plates Made and  
Drilled to Order.

## PATENT CUTTERS FOR THE TEETH OF GEAR WHEELS

can be sharpened by grinding without changing their  
form. Cutters made on this plan will outlast many of  
the old form, with the advantage of being always ready  
for use. If the cutter becomes dull before a wheel is completed, it can be taken out, sharpened and  
returned to its place in a few moments without risk of altering the form of teeth to be cut. Cutters  
for milling any irregular form made to order on the same plan. Parties having occasion to use mills  
for irregular shapes on sewing-machine, gun or other work, will readily see the advantage such cutters  
possess over those in general use, both as regards economy and convenience. Descriptive circular  
with price list sent by mail on application.



## RHODE ISLAND HORSE SHOE CO.,

OFFICE, 81 Canal Street, Providence, R. I. WORKS at Valley Falls, R. I.

Manufacturers of

PERKINS and RHODE ISLAND PATTERNS of

## HORSE AND MULE SHOES.

## MINING ITEMS.

### PRECIOUS METALS.

Silver has been discovered eight miles  
north of Colorado City. The ore assays \$65  
per ton.

The bullion product of the Black Hills for  
the year 1877 was nearly \$4,000,000, and  
will not fall short of \$8,000,000 for the pres-  
ent year.

It is reported from Deadwood, D. T., that  
the California Company have purchased the  
Old Abe, Palmetto and American Flag  
mines, adjoining the Homestead.

We learn from the Gold Hill News, Aug.  
28, that the daily yield of ore from the Con-  
solidated Virginia, Nev., has been reduced to  
145 tons, owing first to the intense heat on  
the lower levels, and secondly to a delay of  
48 hours in the hoisting caused by the  
breakage of the pump rod at the C. & C.  
shaft.

The reports from Silver Islet, Mich., are  
of the most encouraging character. A letter  
informs us that the new "find" is simply  
immense, the wealth of mineral being be-  
yond computation. A gentleman in whom  
we have confidence informs us that while  
over there a short time ago he was shown a  
nugget of native silver taken from the mine  
which weighed 356 pounds, and was in-  
formed by the superintendent that in addi-  
tion to the large quantities of barrel work  
equally as rich, the rock stamped in the  
mill was paying the entire cost of mining  
and milling twice over.—*Marquette Mining  
Journal.*

Since our last issue shipments of bullion  
from the prominent mines have been as fol-  
lows: Northern Belle, Aug. 19, \$3,132.88;  
Aug. 24, \$7,912.78; Bodie, July 30 to Aug.  
23, \$428,076.29; Aug. 23, \$32,800; Aug. 24,  
\$36,000; Aug. 25, \$15,400; Aug. 26, \$17,000;  
Aug. 27, \$30,000; Standard, \$20,000; Aug.  
25, \$21,146.23; Endowment, \$4,272.86;  
Manhattan, Aug. 22, \$12,232.08; Tybo  
Consolidated, Aug. 19, \$4,631.25; Aug. 21,  
\$4,636.12; Aug. 23, \$4,536.75; total for  
August, \$52,049.90; Star, Aug. 19, \$3,038;  
total for August to date, \$11,751; Consoli-  
dated Virginia, Aug. 24, \$123,735.18; Cali-  
fornia, Aug. 24, \$116,713.46; Independence,  
Aug. 19, \$6,177.22; Aug. 26, \$8,000; Silver  
Reef, Aug. 16, \$4,244.28; Ontario, Aug. 16,  
\$2,977.64; Aug. 17, \$2,871.87; Aug. 19,  
\$5,226.63; Aug. 20, \$3,019.52; Aug. 21,  
\$2,719.86; Aug. 22, \$2,906.03; Old Tele-  
graph, Aug. 17, \$2,400; Raymond & Ely,  
Aug. 20, \$5,436.23; McCracken, Aug. 26,  
\$8,784.70; Christy, Aug. 28, \$5,504.—*Min-  
ing and Scientific Press*, Aug. 31.

### COPPER.

In the last 30 years the Lake Superior  
copper mines have produced over a quarter  
of million net tons, valued at \$117,397,980.  
The greatest product—19,886 tons—was  
raised in 1877. This was valued at \$7,556,  
680.

### COAL.

The statement made a few days since that  
the Grand Lake Coal Company had pur-  
chased at bankrupt sale the coal works of  
John Penny, located opposite McKeesport,  
on the Youghiogheny River, was an error.  
The purchasers were Messrs. J. B. Sneathen  
& Co., of Pittsburgh. The coal in these  
mines has no superior in that section, being  
the real "Youghiogheny."

The production of the Schuylkill region  
for the week ending Aug. 31 was 156,646  
tons, as against 173,779 tons for the week  
previous and 185,155 tons for the cor-  
responding week of last year. The total pro-  
duction for the week was 372,579 tons,  
against 313,271 tons for the same week of  
last year, an increase of 59,308 tons. For  
the year the production foots up 10,505,454  
tons, against 12,645,588 tons for the cor-  
responding period of last year, a decrease of  
2,140,134 tons.—*Pottsville Journal.*

The Frostburg (Md.) Journal says the  
New Central Coal Company have increased  
their shipments by the Pennsylvania route  
from Midlothian mines from ten cars per  
day to fifteen. This, together with their canal  
shipments of two boats per day, puts their  
mine up to the full capacity of their present  
horse-power, and gives the men full work.  
The Blen-Avon Coal Company have also  
materially increased their output during the  
week.

The Bureau of Statistics gives the follow-  
ing figures for the imports and exports of  
coal for the 12 months ending June 30:

	1876.	1877.
Imports, bituminous.....	578,457	497,270
Exports, ".....	319,277	321,665
" anthracite.....	340,661	418,794

A new coal shaft is being sunk in Streater,  
Ill., by Messrs. Kangley & Lennon.

The Western Coal Association, a combina-  
tion that controls the price of anthracite  
coal west of the water routes, met in the  
Coal and Iron Exchange in New York on  
Saturday, the 30th ult. Both coal compa-  
nies and railroad lines were fully repre-  
sented. An adjustment of transportation  
was agreed upon, making them uniform to  
competing points, and prices of coal were  
advanced 25 cents per ton.

The mines at West Monterey, Pa., are  
getting 60 cents per ton for a 3-foot vein of  
coal which requires blasting.

At a meeting held at Philadelphia Sept.  
2, the Coal Exchange, composed of opera-  
tors in the Schuylkill region, determined to  
make no change in last month's prices.

The coke works of Hogsett, Watt & Co.,  
located at Mount Braddock, have been leased  
for \$600 per month by Messrs. Rafferty, Col-  
vin & Torrence.

The Dunbar Furnace Co. are running the  
Hill Farm coke ovens, formerly the property  
of Bliss, Marshall & Co.

The Hampton men, at Wilkesburg, Pa.,  
still make about one day in the week.

The general mining engineer of the Cam-  
bria Iron Works, at Johnstown, Pa., John  
Fulton, has directed the superintendent of  
mines of the company to remove all persons  
under 12 years of age employed therein.  
This is in accordance with an act of the  
last Legislature "to prevent cruelty to chil-  
dren."

The Mineral Ridge mines, at West Mon-  
terey, Pa., Allegheny Valley Railroad, are  
running steady at present.

The Cleveland shaft and other banks in  
the vicinity of Brookfield, Pa., are reported  
as doing fair, with prospects of doing better  
this month.

The miners of P. H. Laufman & Co., of  
the Apollo Rolling Mill, Pa., have had steady  
work all this season.

The total product of Mexican mines from  
1535 to 1877 is estimated at \$4,067,119,321.  
During the week ending August 20th, 54,976  
pounds of sulphur and 39,360 pounds of  
quicksilver were shipped from Calistoga to  
San Francisco.

At New Straitsville, Ohio, in the Hocking  
Valley, trade continues dull at all the mines  
except the Central, which works near full  
time.

The Leechburg, Pa., mines continue to  
run pretty steady, the men getting from  
four to five full days per week.

The mines in the neighborhood of West  
Austintown, Ohio, have been doing much  
better the past month, and there are pros-  
pects for a good fall run. The New Lisbon  
Coal Co. have been doing all they can all the  
month. The Haroff Coal Co. have been do-  
ing the same. The Anderson new shaft at  
times has been in want of flats.

The Philadelphia Ledger gives the follow-  
ing statement of the tonnage of anthracite  
coal shipments of the leading Eastern coal-  
carrying roads for the week ending on Aug.  
24, and for the year to the same date, com-  
pared with their respective amounts carried  
to the same time last year:

	Week	1878.	1877.	Differences.
Reading.....	184,773	3,621,183	4,799,183	Dec. 878,000
Schuylkill Nav.....	21,122	365,162	425,222	Dec. 126,860
Lehigh Valley.....	64,781	2,475,154	2,911,104	Dec. 435,950
D. & L. Western.....	54,870	1,286,325	1,492,943	Dec. 179,613
Shamokin.....	17,287	337,777	391,104	Dec. 53,327
Central New Jer.....	75,717	1,433,881	1,777,556	Dec. 341,674
United New Jer.....	11,740	478,585	519,184	Dec. 40,599
Pennsylvania Coal.....	22,293	505,429	684,169	Dec. 178,741
Del. & Hudson.....	32,711	1,246,912	1,289,868	Dec. 42,956
H. & B. T.....	7,865	168,897	178,741	Dec. 9,843
Penn'a & N. Y.....	35,691	773,991	845,943	Dec. 71,952
Cleaved Penn'a.....	29,149	528,535	565,518	Dec. 36,983
Anthracite.....	522,391	10,215,611	12,356,920	Dec. 2,141,309
Bituminous.....	55,299	2,048,361	1,969,773	Dec. 78,588
Total.....	577,690	12,274,422	14,355,993	Dec. 2,081,571

The quantity of coal and coke carried  
over the Pennsylvania Railroad for the third  
week in August was 94,548 tons, of which  
74,441 tons were coal and 20,107 tons coke.  
The total carried for the year is 2,966,335  
tons, of which 2,309,134 tons were coal and  
657,201 tons coke. These figures embrace  
all the coal carried over the road, East and  
West.

On Friday, the 30th ult., mining was sus-  
pended in the Lehigh Coal and Navigation  
Company's mines until the 15th of Septem-  
ber. This results from the coal combina-  
tion's reduced allotment for September. A  
majority of the miners are satisfied with this  
suspension, because it was so ruled by the  
combination in order to advance the price of  
coal in the market, which will advance their  
wages. They think that after the 15th they  
will have steady work, and an advance in  
wages for the remainder of the season. It  
is to be hoped that they will realize their ex-  
pectations, but there is a gloomy outlook in  
the depression of the industries that con-  
sume coal, and there is a prospect that there  
will be other suspensions all along during the  
season in order to keep up the price of coal  
in the market.—*Mauch Chunk Democrat.*

A total suspension of the collieries in the  
Schuylkill region took place on the 2d inst.,  
but resumed again on the 9th, and will fill  
the quota for the month, which is something  
over 280,000 tons, which will require about  
ten days' work. This small allotment for  
September has had the effect of somewhat  
evening up the trade and points to better  
times ahead. The miners do not care as to  
the stoppage, but, under the circumstances,  
say it is the best thing that could be done, as  
Eastern and Southern buyers will now see  
that the combination is a fixed fact, and, as  
a consequence, will buy more largely. If  
the stoppage had taken place in July and one  
week in August, it would have been best for  
the trade, as it would have given the miners  
steady work for the rest of the year, while  
it would have given the operators full cir-  
cular rates for their coal.

### IRON.

The Lake Superior Company are sinking  
another shaft a little south of the new one  
near the M. & O. Railroad track. This  
shaft will be for the double purpose of tap-  
ping the deposit and for ventilation, as good  
air is much needed there.

Concerning the new mine being opened by  
the Menominee (Mich.) Mining Company on  
section 5, the Menominee Herald, in the fol-  
lowing but corroborates the opinion of a  
number of our iron men who recently visited  
that range: The ore is at least equal to any  
other in this region; the stripping is very  
light, and the deposit bids fair to be the  
largest east of the river, at least. The com-  
pany has stripped for a distance of 40 feet  
across the mine without reaching the walls,  
and is now sinking a shaft in the ore prepa-  
ratory to commencing shipments. The grad-  
ing of the tract to the mine will begin next  
week and the work completed as soon as  
possible.

The manganese Iron Ore Company, Ne-  
gaunee, Mich., is giving employment to about  
25 men at present.

### MISCELLANEOUS.

A most important contract and compro-  
mise has been made with the Suto Tunnel  
Company by the owners of the Julia Con-  
solidated Mine. By the terms of this con-  
tract the tunnel company are to complete  
and connect with the Julia shaft at the  
earliest day possible a south branch of their  
tunnel, which will serve the double purpose  
of a drain and working tunnel for the con-  
veyance of timbers and supplies. Work on  
this branch tunnel is to be prosecuted from  
both ends, and has already been commenced  
on the tunnel side. As soon as the tunnel  
reaches the Julia shaft, the shaft will be  
doubled in size and be used for the hoisting  
and lowering of supplies through the tunnel,  
a depot being established for that purpose.  
For the privilege of the drain the Julia com-  
pany is to pay \$100,000; and for each foot  
of tunnel run from the Julia side the com-  
pany is to receive back \$70. Not the least  
important feature of the contract is that the  
Suto Tunnel Company release all claim to  
that portion of the Julia claim lying within  
the limits of the Suto corporation, and  
liable to dispute by them. This is very im-  
portant as indicating the policy of the Suto  
Tunnel Company. On August 26th ground  
was broken for the south lateral drift of the  
Suto tunnel. For a long time the tempera-  
ture in the face drill holes of the Suto tun-  
nel has been 110 degrees.



# RUSSELL & ERWIN MANUFACTURING COMPANY

## Manufacturers of HARDWARE.

Factories, NEW BRITAIN, CONNECTICUT, U. S. A.

Manufacturers' Agents and Dealers in General Hardware at our  
**WAREHOUSES.**

NEW YORK, - - - Nos. 45 and 47 Chambers Street.

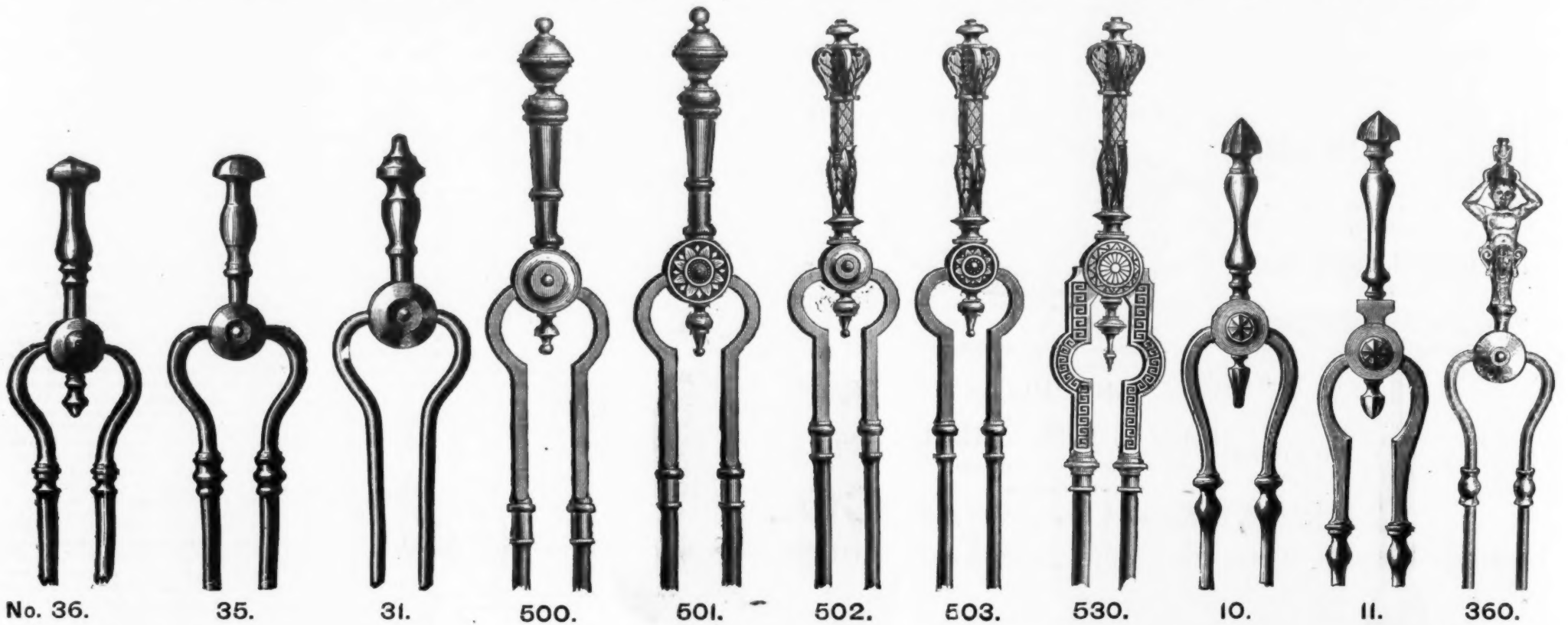
BALTIMORE, MD.,

PHILADELPHIA, - - - No. 425 Market Street.

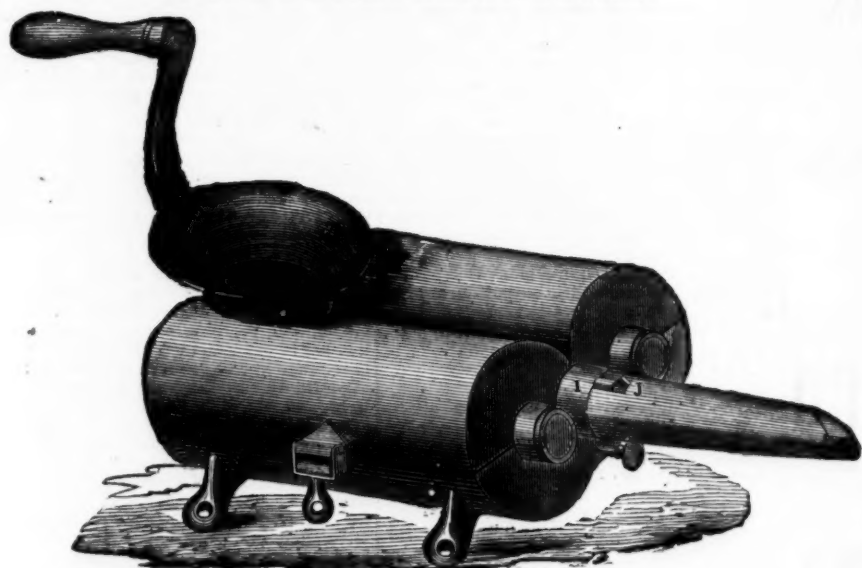
WM. H. COLE, AGENT,

17 South Charles St.

## POLISHED FIRE IRONS.



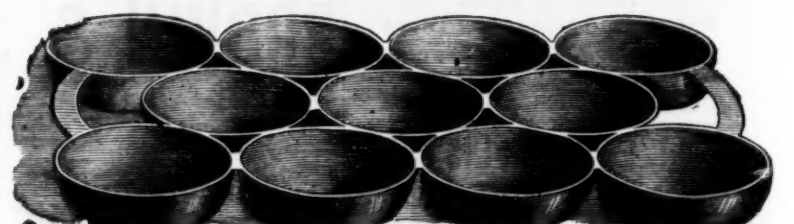
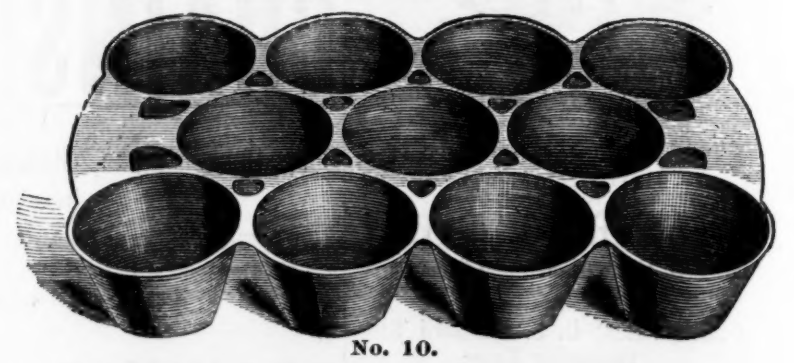
Hale's Patent Meat Cutter.



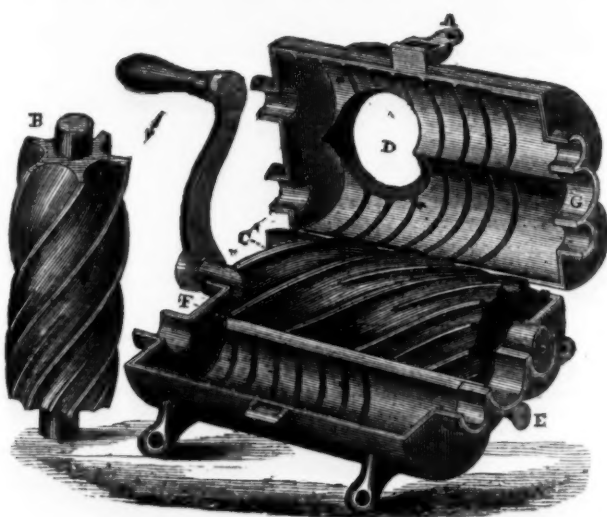
Coal Tongs.



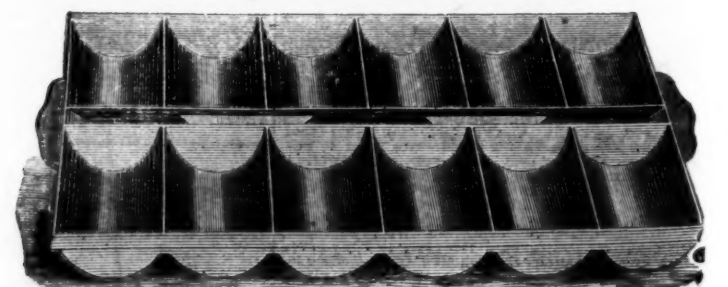
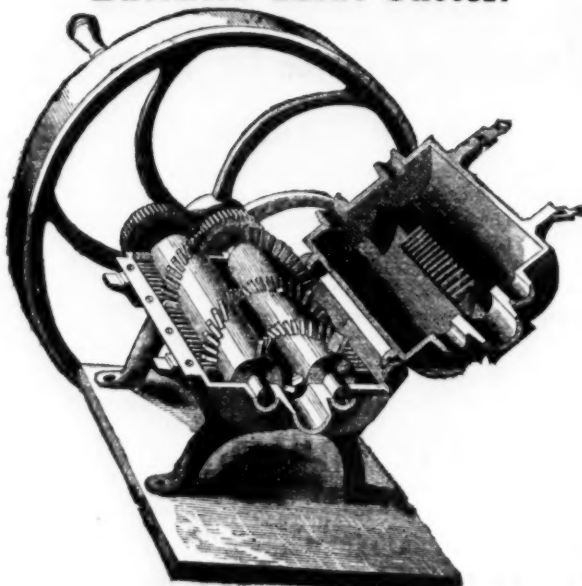
Waterman's Patent Bake Pans.



Hale's Patent Meat Cutter.—Open.



Butchers' Meat Cutter.





Cutlery.

**FRIEDMANN & LAUTERJUNG,**  
Manufacturers of **PEN AND POCKET CUTLERY,**  
**Solid Steel Scissors, Shears, Razors,**  
**Russia Leather Straps, Hones, &c.**  
Sole proprietors of the renowned full concave patent  
"ELECTRIC RAZORS,"  
And the celebrated "ELECTRIC SHEARS." Nickel Plated  
Hones.  
Agents for the **BENGALL RAZORS,**  
**AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.**  
1 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

**MERIDEN CUTLERY CO.**  
The Oldest Manufacturers of Table Cutlery in America.  
THE "PATENT IVORY" HANDLE TABLE KNIFE.  
EXCLUSIVE MAKERS OF THE  
**CELLULOID**  
HANDLE FOR TABLE CUTLERY. A most beautiful and perfect substitute for Ivory. Also makers  
of all kinds of **TABLE, BUTCHER AND HUNTING KNIVES.**  
Illustrated catalogues with prices sent to the trade on application. 49 Chambers St., New York.

**THE LAMSON & GOODNOW**  
**88 CHAMBERS ST. N.Y.**  
**MFG. CO.**  
**AMERICAN TABLE CUTLERY &c.**  
ESTABLISHED 1853.  
**AARON BURKINSHAW,**  
Manufacturer of Pen and Pocket Cutlery, Pepperell, Mass.  
My Blades are forged by hand from the best Cast Steel, and warrant-  
ed. To me was awarded the Gold Medal of the Conn. State Agricultural Society.

**HALL, ELTON & CO.,**  
Electro Plated Ware, German Silver and Britannia Spoons.  
THE "ORLEANS."  
Factories, Wallingford, Conn. Salesroom, 75 Chambers Street, New York.

**THE FRARY CUTLERY COMPANY,**  
FACTORY, BRIDGEPORT, CONN.  
NEW YORK OFFICE & WAREHOUSE, with WIEBUSCH & HILGER HARDWARE CO., 84 Chambers St.  
**Manufacturers of all kinds of Table Cutlery.**  
FRARY CUTLERY CO. PAT. JULY 4. 18. OCT. 10. 1876.  
FRARY CUTLERY CO. PAT. JULY 4. 18. OCT. 10. 1876.

The above illustrations represent their New Patent Screw Tang Lock Fast Solid Handle Knife.  
There is no question but that a solid handle knife is much more preferable than a scale tang. The great objection to their use hitherto is, that no solid wood handle has been placed on the market with the handle properly secured—no handle put on with cement will stand the wear and tear of every day usage. The cement will expand and contract with the action of heat and cold, and become loose, crack and come off, causing great prejudice against their use. This objection is overcome in our patent screw tang. A wood screw is welded to the tang of the knife or fork, and screwed firmly and securely in the handle and locked there by the bolter, making a very strong and handsome knife. Which we warrant never to get loose, crack or come off. We manufacture a large variety of patterns, both Table, Butchers and Carvers, and furnish the patent handle nearly as low as the scale tang. We are prepared to furnish this line of goods, together with the scale tang and iron handle, very promptly, and very respectfully invite the attention of the trade.

**HOLROYD & CO.,**  
Waterford, N. Y.  
**CLARK'S PATENT EXPANSIVE BITS**  
Made of JESSOP'S BEST CAST STEEL, and warranted superior to any other  
Two sizes: Large Size Boring, 1/4 to 3 inches; Small Size Boring, 1/4 to 1 1/4 inches.  
W. A. CLARK'S PATENT.  
Manufactured by  
**WILLIAM A. CLARK,** - - - **Westville, Conn.**

Cutlery.

**McCoy & Co.,**  
134 & 136 Duane Street, New York,  
SOLE WHOLESALE AGENTS  
**CLARK'S**  
**PATENT HORSE CLIPPER**  
Five styles. Fully described by our circular and price list, which we will send on application.  
The genuine are stamped on both the wooden and metal parts, as shown in the illustration, as a protection against inferior imitations.  
All repairs executed with care and dispatch.

**HERMANN BOKER & CO.,**  
101 & 103 Duane Street, New York,  
SOLE AGENTS FOR THE  
**GARDNER PATENT**  
**POCKET KNIVES**  
The assortment of Gardner's Celebrated Barlow Knives has been increased, and they are now furnished with Rubber, Bone, Stag and Wrought Iron Handles.  
All of Gardner's Patent Knives are fully warranted.

**NAUGATUCK CUTLERY CO.,**  
Manufacturers of FINE PEN & POCKET CUTLERY.  
FULLER BROS., Sole Agents, 89 Chambers and 71 Reade Sts., N. Y.  
**STANLEY RULE AND LEVEL CO.,**  
MANUFACTURERS OF  
**Improved**  
**Carpenters' Tools.**  
Factories, New Britain, Conn.  
WAREHOUSES, 29 Chambers St., New York.

Cutlery.

**JOSEPH S. FISHER,**  
No. 411 Commerce St., PHILADELPHIA  
AGENT FOR  
**George Wostenholm & Son,**  
"Limited."  
Washington Works, SHEFFIELD,  
Celebrated I-XL Cutlery, Razors, &c.  
AGENT FOR  
**WALTER SPENCER & CO.,**  
Steel and File Manufacturers,  
Rotherham, ENGLAND.  
Corporate Mark.  
NO SPENCER ROTHERHAM  
Granted 1777.

GLASS TRADE ITEMS.

The window glass factory of Abel, Kim & Co., in the Thirtieth Ward, South Side, Pittsburgh, has been partially shut down, owing to the prevailing low prices. The firm have reduced their working force from 50 to 20 men, and will continue to manufacture for the local trade.—The Buckeye Glass Company, Martin's Ferry, Ohio, are preparing a second furnace, which will be put into operation shortly, the product of one being insufficient to supply orders.—The window glass works of Bellaire, Ohio, resume operations this week if the operatives agree to a 2 per cent. reduction in their wages.—The Lenox Furnace Glass Works, Mass., which have a large stock of roofing plate glass on hand, have shut down until the market brightens up.—It is said that the great case of the Lenox Plate Glass Co. against W. E. Dodge, involving several hundred thousand dollars, will be reopened, new evidence having been discovered.—The Keystone Chimney Co., Pittsburgh, Pa., are running full time, and are behind with their orders.—It is reported that the employers at Rock Island, Ill., are trying to secure a set of hands who will agree to let 25 per cent. of their wages remain as a guarantee against losses, &c. This is equivalent to a reduction, and is intended to enable them to undersell Pittsburgh manufacturers.—S. Hertz & Co., of Bellevernon, Pa., have enlarged both their furnaces, adding two more pots to each furnace. They commenced making glass in one of the furnaces last week, and will have the other ready for operation in about two weeks.—Plunkett & Ilmsen's chimney house, at Pittsburgh, Pa., is on full time.—The report is that the Bay State Glass Works at East Cambridge, Mass., will start up again in a few weeks, and will then give employment to 150 to 200 hands.—The pots in the new furnace of the Excelsior Glass Works, at Martin's Ferry, were filled on Friday last.—Fredericks & Staffin, glass stainers, of Detroit, have just received a large order from Topeka, Kansas, the glass to be applied on a large Baptist Church.—Kearns, Herdman & Garsuch, glass manufacturers, Zanesville, Ohio, make window glass and fruit jars. They are running largely at present on Mason, Gem and Standard fruit jars, and have a capacity of 200 boxes of window glass per week, though they have been running exclusively on fruit jars since April 1. Three furnaces are running, 250 men employed, and 200 gross of jars per month manufactured.—The glass works at Ottawa, Ill., have commenced operations again.—A company for the manufacture of glass coffins is being organized in Wooster, Ohio.—The Labelle Glass Works, Bridgeport, Ohio, only lost one day during the year ending in July, and the summer vacation was unusually brief, only three weeks, in which to make necessary repairs.—The Central Glass Company, Wheeling, W. Va., whose men have been on a strike for a week past, nailed up their factory on the 4th. There will be no more work there before next spring.

**CORPORATE MARK,**  
\* \* \*  
**Joseph Rodgers & Sons' (LIMITED)**  
**CELEBRATED CUTLERY,**  
No. 82 Chambers Street, New York.  
**F. & W. CLATWORTHY, Agents.**  
The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.  
To distinguish Articles of Joseph Rodgers & Sons' Manufacture, please to see that they bear the Corporate Mark.  
ESTABLISHED 1852.  
**NEW YORK KNIFE CO.**  
MANUFACTURERS OF SUPERIOR  
**Table & Pocket Cutlery,**  
WARRANTED TO BE MADE OF THE BEST MATERIAL.  
**WALKILL RIVER WORKS,**  
Walden, Orange Co., New York.  
THOS. J. BRADLEY, President.

**KRAUSS & HAHN,**  
Importers, Manufacturers and Dealers  
In all kinds of  
**Cutlery and French Grindstones,**  
152 Centre, cor. Walker St., N. Y.  
Ground alides Razors of all brands imported and concealed by steam power for the trade. Price for concealing from \$3 to \$5 per dozen. Price list sent on application.  
**Wilson Bohannon,**  
Manufacturer of Patent  
**BRASS**  
**Pad Locks,**  
FOR  
Railroad Switches, Freight Cars, and the Hardware Trade.  
All sizes, with Brass and Steel keys, with & without chains.  
**Passenger Car Locks,**  
Bronzed, Nickel-Plated and Japanned.  
**Patent Tubular Night Latches.**  
Will answer for Doors from 1 1/4 to 2 inches.  
**BROOKLYN, N. Y.**  
Catalogues and Samples sent upon application.

**FOR SALE.**  
**Job Lots Hardware.**  
Great inducements to the trade. Two hundred dozen Handled Chopping Axes at a low price.  
**A. W. WHEELER,**  
141 Lake St., Chicago, Ill.

**A Workman's Version of the Strike in the Philadelphia Mills.**  
A correspondent of the Philadelphia Record, who signs himself "An Iron Worker," speaks of the strike in the rolling mills as follows:  
Knowing that the columns of your paper are ever open to the workman for the redress of his grievances, I venture to address you, in the hope that by laying the facts before you I may to some extent correct the impression which the ironmasters of this city are endeavoring to create, viz., that the present strike of workmen is unjustifiable. A comparison of prices paid for work in 1873 and those paid now will show what has already been taken from our hard earnings. Of course we know the price of manufactured iron has come down in that time, and are prepared to submit to a reduction to meet it; but when it is proposed to take 40 per cent. off of a price that is already so low that it scarcely enables us to provide the necessities of life, we are wondering what is to become of our wives and families. In 1873 I earned \$5.55 for a day's work as heater for three tons of middle size or four tons of large-size iron made. The present price for the same work is \$2.68. It is now proposed to reduce this price, making a new classification, which calls for four tons of iron as a day's work instead of three tons, as before. Since 1873 our wages have been reduced \$2.87 per day, and now we are asked to submit to another reduction of 67 cents per day, and at the same time make one ton more of iron.  
The workmen insist that the reduction in their wages is greater than 11 per cent., from the fact of a different classification. For instance, on hand iron, size 2 1/2 x 14, the present price paid is \$1.34 per ton; a day's work for a heater was two tons, making a day's wages \$2.68. On the new schedule the price paid for this size of iron is 63 cents per ton, which would be \$1.26 for a day's work.  
Those who are at all familiar with the work in a rolling mill know that the handling of red-hot iron over scorching fires is the most laborious kind of work, and not at all a labor of love.  
Of course if the present prices of manufactured iron warranted so great a reduction we could not ask the masters to carry on their works at a loss to themselves, but we believe the prices do not warrant this reduction, that the outlook is now better than it has been for some time, and with the necessities of life still as high in price as before, we deem it an injustice on the part of the employers thus to cut down our pay. For the sake of earning the means to live in an humble way as the result of our laborious occupation, we believe our present course of resistance is justifiable. We trust we may not be misjudged by a generous public.  
The dangers of spontaneous combustion of bituminous coal are illustrated in the fact that no less than four per cent. of all the coal-laden vessels that have left English ports during the last five years for destinations south of the equator have been lost by ignition of their cargoes.



## S. H. & E. Y. MOORE,

68 Lake Street, CHICAGO, ILL.,  
Heavy Hardware & Railway Supplies.

AGENTS FOR  
Providence Tool Co., Reading Bolt & Nut Works, Syracuse Bolt Co.,  
And Other Manufacturers.



### CLIMAX BARN DOOR HANGERS,

MOORE'S

Anti-Friction Sliding Door Sheaves,  
" " Parlor Door Hangers,  
" " Baggage Car Door Hangers,  
&c., &c.

We invite the attention of the trade and of architects to the accompanying cut of MOORE'S ANTI-FRICTION PARLOR DOOR HANGER. It is by far the

Simplest, Strongest, Most Durable, Easiest Working and Most Readily Adjusted

Hanger ever made for Parlor Doors. It runs on  $\frac{1}{4}$  x  $\frac{1}{4}$  flat iron track, and is absolutely noiseless in operation.

Depot for goods of our manufacture:

FERNALD & SISE, 100 Chambers Street, New York.  
E. & C. GURNEY & CO., Hamilton, Canada.

## MIRROR STOVE POLISH.

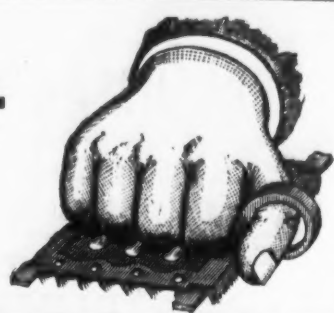
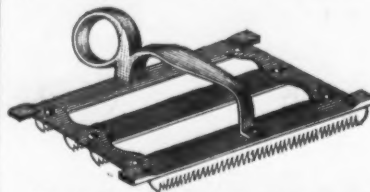
It will COVER MORE SURFACE than any other in the market, and is the ONLY BLACKING that can be applied to a HOT STOVE, or that will receive a POLISH AFTER IT BECOMES DRY. Send for sample.

Manufactured by

S. H. & E. Y. MOORE.



## HOTCHKISS' Novelty Combs.



We ask the attention of the public to our Patent Novelty Curry Combs, represented above, which are universally acknowledged to be far superior to anything in the market, being neat and durable and the most convenient to handle of any comb yet produced. They are put up in paper boxes of one dozen each, and packed 24 dozen in a case. GIVE THEM A TRIAL. For Sale by the Jobbing Hardware, Saddlery and Woodenware trade.

HOTCHKISS' SONS, Bridgeport, Conn.

## Philadelphia "STAR" Bolt Works.

NORWAY IRON

FANCY HEAD BOLTS,

Carriage & Tire Bolts. Star Axle Clips, &c.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa.



W. P. TOWNSEND & CO.,  
PITTSBURGH, PA.,

Manufacturers of every description of First Quality,

## RIVETS.

HAYDEN & SMITH,

Auburn, N. Y.,

Manufacturers of

Carriage and Saddlery Hardware,

Owners of

LAMB'S PATENT

Seat Fasteners.

The Safest and only reliable Seat Fastener for Wagons.

## THE STANLEY WORKS,

MANUFACTURERS OF  
Wrought Iron Butts, Hinges

### DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

We have recently purchased CROOKE & CO.'S entire stock of WROUGHT BRIGHT BUTTS, orders for which are solicited.

FACTORIES:  
New Britain, Connecticut.

WAREHOUSE:  
79 Chambers St., New York.

TURNED MACHINE SCREWS,  
One-sixteenth to five-eighths diameter.  
Heads and points to sample.  
IRON, STEEL and BRASS.  
Lyon & Fellows Mfg. Co.,  
Cor. 1st and North 3d Streets, Williamburgh, N. Y.

## LEWIS, OLIVER & PHILLIPS,

Nos. 91, 92 and 93 Water St., and 114, 116 and 118 First Avenue,  
PITTSBURGH, PA.,

MANUFACTURERS OF

## Wrought Iron Hardware SPECIALTIES

FOR THE

Southern and Western Trade.

Send for circular of illustrations.

## TENNIS & WILSON,

Successors to J. CLARK WILSON & CO.

81 Beekman St., New York.

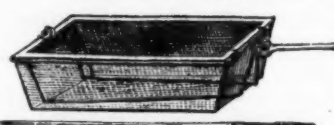
SOLE AGENTS FOR

Snell Manufacturing Co.,  
Wilson Manufacturing Co.,  
Oak Hill Manufacturing Co.,  
Bromwell Manufacturing Co.,

Davis Level & Tool Co.,  
Clark & Co., Taylor Mfg. Co.,  
Fisher & Norris, W. Hunt & Co.,  
Nashua Lock Co., etc., etc.

Brilliant Corn Popper.

The Best Made Popper in the market.



Square, Full Braced, Wire Lid, Brilliant Wire.

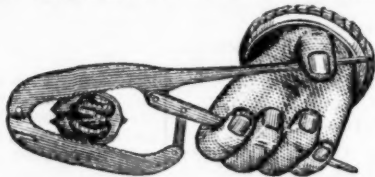


Round, Full Braced, Tin Lid, Brilliant Wire.

## LITTLE GIANT NUT CRACKER.

The Only Perfect

Nut Cracker.



Circulars sent on application.

Special Prices made to the trade.

## THE AMERICAN MACHINE COMPANY,

MANUFACTURERS OF

### Hardware Specialties.

OFFICE AND FACTORY, - No. 1916-1924 N. 4th St., Philadelphia.



Is double acting, throws a continuous stream 40 feet. Useful for sprinkling lawns and roads, washing windows, extinguishing fires, &c. Very simple and durable, and easy to work. Price, complete, boxed, \$7.00 each. Discount to trade.

L. M. RUMSEY & CO., Agents, St. Louis, Mo.

## ANVIL NAIL CO.

We desire to call the attention of the trade to our new manufacture of

### Steel Horse Shoe Nails,

made from metal prepared in the Martin-Siemens Furnace by our PATENT process, which produces a nail having all the requisites for a

#### PERFECT HORSE SHOE NAIL.

The well-known desirable properties of a perfect nail are, that the POINT should be sharp, the SHANK stiff, to drive without crippling under the hammer, sort enough to clinch readily, while sufficiently tough to avoid all danger from the "drawing the clinch" or breaking the neck under the head. These properties we claim for the

#### "ANVIL HORSE NAILS."

In the process of manufacture the metal is compressed under the head, which gives the nail great strength where it is required (between the shoe and hoof), and the cold rolling gives it a stiffness attained in no other way, while the quality of the metal used insures a clinch and point unsurpassed by any nail ever offered in the market. Samples and prices sent on application.

### ANVIL NAIL CO.,

65, 67 and 69 Washington St., New York.



### R. COOK & SONS,

Manufacturers of

Carriage & Wagon AXLES.

WINSTED, CONN.

ESTABLISHED 1839.

### THE PRATT & WHITNEY CO.,

Hartford, Conn., U. S. A.,

Make specialties of

### DROP HAMMERS,

Punching Presses, Hand Drilling Machines, Ratchet Drills, Combination Lathe Chucks, Cutters for Teeth of Gear Wheels, Screw Plates, Hand Machine, Nut and Pipe Taps, Bolt Cutters, &c., &c.





# H. D. SMITH & CO.,

Plantville, Conn.,

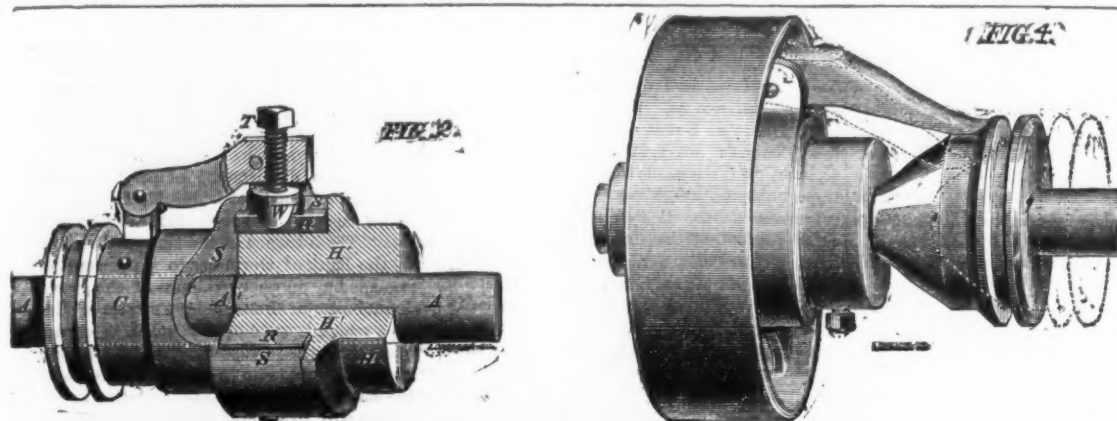
Manufacturers of the

## BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.



### PATENT HUB FRICTION CLUTCH.

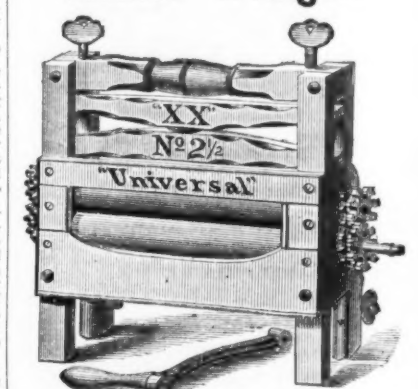
Manufactured by the HUB FRICTION CLUTCH CO., Limited, Philadelphia.

We claim for this device the following advantages for a perfect clutch, it having been adopted by several of the leading manufacturers of machinery and machinists' tools: It works easily but effectively. It works instantly and without noise. It is very durable, and is extremely simple and cheap, and has proven itself to be the best clutch in the market. Special arrangements can be made with leading manufacturers for the adoption of this clutch for their own tools. This clutch can and will be sold for less money than any other clutch in the market. For sale by H. D. SMITH & CO., 111 Liberty St. N. Y.; W. SELLERS & CO., Liberty St., N. Y.; F. & A. BROWN, New York; CORLEMAN, DODGE & CO., New York; G. O. CRISSEN, Philadelphia; MORRIS, REED & CO., Baltimore, Md.

HUB FRICTION CLUTCH.  
James Smith & Co., Mfg. Agents

twenty-one plates (plates 90-108 and 113-135 W. and B. Buildings), showing Libraries, Town Hall, Masonic Hall, Hotels, Opera House, Court House and Railway Stations, including a variety of details of same, descriptive letter press, etc. Drawings to scale. Price, post paid.....\$3.50  
**Bicknell's School House and Church Architecture.** Containing twenty-three plates (109-132 W. and B. Buildings), showing twenty-six Plans and Elevations of District, Village and City School Houses; twenty-five Plans, Elevations, Views and Sections of medium and low-priced Churches, including a variety of Miscellaneous Church Details, etc. Designs to scale. Price, post paid.....\$3.00  
**Bicknell's Stables, Out-Buildings, Fences and Miscellaneous Details.** Containing twenty-four plates (136 to 160 W. and B. Buildings) showing sixteen Plans, Elevations and Views of Stables, several Out-Buildings and Fences, and over one hundred Miscellaneous Details. Also Summer Houses, Seaside Cottages, Boat Houses, Street View of Twelve Dwellings, etc. Elevations and Plans to scale. Price, post paid.....\$2.50  
**Withers' Church Architecture.** By Frederick Clark Withers. Illustrated with Plans, Elevations, and views of twenty-one Churches and two School Houses. Photo-Lithographed from original drawings; also full descriptive Letter-press, which includes numerous Engravings on Wood, showing Construction and Details. One large volume of fifty-one 2x12 plates, substantially bound in extra cloth, sent by express to any part of the United States on receipt of the price.....\$15.00  
**Bicknell's Detail, Cottage and Constructive Architecture.** Containing seventy-five large Lithographic Plates, published under the direction of A. J. Bicknell, showing a great variety of Designs for Cornices, Brackets, Windows and Window Caps, Doors, Piazzas, Porches, Bay and Dormer Windows, Observatories, Towers, Chimney Tops, Balconies, Canopies, Scrolls, Gable and Sawed Ornaments, Fences, Stairs, Newels, Architraves, Mantels, Plaster Finish, etc., including forty-five Perspectives, Elevations and Plans of Modern Designs for Cottages, with Details, and eighteen Elevations of Summer Houses, Villas, Seaside Cottages and Country Houses, together with fourteen Designs for Street and Store Fronts, with inside finish for Stores and Banks; also Framing for Dwellings, Barns, Exhibition Buildings, Roofs, Brackets, etc., etc., designed for the use of Architects, Builders, Carpenters and all who contemplate Building or Remodeling Wood, Stone or Brick Buildings. One large 4to volume, sent free by mail or express on receipt of price.....\$10.00  
**Bicknell's Village Builder with Supplement.** Fifth Edition. May 1st, 1873. Shows Elevations and Plans for Cottages, Villas, Suburban Residences, Farm Houses, Stables and Carriage Houses, Store Fronts, School Houses, Churches, Court Houses and a Modern Jail. Also Exterior and Interior Details for Public and Private Buildings, with approved form of Contract and Specifications, containing seventy-seven 2x12 plates, drawn to scale, giving the style and cost of building in the different sections of the country, being an Original Work, comprising the Designs of twenty Architects, representing the New England, Middle, Western and Southwestern States. One large 4to volume. Price, with Supplement, post paid.....\$10.00  
**Supplement to Bicknell's Village Builder.** Fifth Edition. May 1st, 1873. Containing twenty plates, showing eighteen Modern and Practical Designs for Country and Suburban Residences of moderate cost, with Elevations, Plans, Sections and a variety of Details, all drawn to scale. Also a full set of Specifications with approved form of Contract, and estimates of cost. One superb 4to volume, mailed, post paid, on receipt of price.....\$4.00

### THE "OLD RELIABLE" UNIVERSAL Clothes Wringer.



Improved with Rowell's Double Cog-Wheels on both ends of each roll.

Over 500,000 sold!

And now in use, giving "Universal" satisfaction.

EVERY WRINGER WARRANTED.

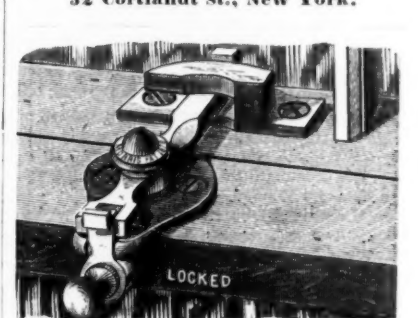
Be sure and inquire for the "Universal."

Sold by the Principal Jobbers in Hardware and House-Furnishing Goods everywhere.

Special rates given for export.

Metropolitan Washing Machine Co.

32 Cortlandt St., New York.



### THE Morris Burglar-Proof Sash Lock.

Patented July 2, 1876. The Safest! The Simplest! The Most Reliable! The Best! N. B.—No springs to get out of order. Sold by all hardware jobbers. Manufactured by the MORRIS SASH LOCK MFG. CO., Office, 168 Walnut St., Cincinnati, O. Price List and Samples furnished to the trade on application. A liberal discount to the trade.

**BUY THE BEST.**

**MICHIGAN**

**STOVE**

**ARE THE BEST**

**DETROIT, MICH.**

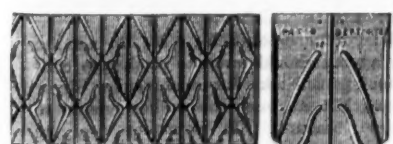
**SUPERIOR TO ALL OTHERS**

With our present large variety and constant additions of new Patterns, we are enabled for the Season of 1878 to meet the requirements of all. To the Dealer who is desirous to secure the Best Stoves in the market, we would solicit he correspond with us and order Samples which we will guarantee to fully meet all recommendations.

We manufacture Stoves for burning all kinds of fuel. **THE GARLAND BASE BURNER,**

Acknowledged Favorite, will appear for season of 1878 with entire changes, which cannot fail to make it the Leading Base Burner.

Send for descriptive catalogue, price list, &c.



### METALLIC SHINGLES.

We call the attention of all parties interested in Roofing, and the owners of large buildings, to the above article. It is superior to slate, cheaper, fire proof, about one-fourth the weight, lays much closer, therefore is storm proof, cannot crack, &c. Any carpenter can put them on. Send for description and Price List to Iron Clad Manufacturing Co., 50 Greenpoint Av., Brooklyn, E. D. P. O. Box, 338, N. Y. City.

### NATIONAL STEAM PUMP.

Adapted to every possible duty.

Send for illustrated catalogue.

WM. E. KELLY & BRO.,

46 Cortlandt St., New York.

John Carver,

MANUFACTURER OF

### CAULKING IRONS,

Cotton, Freight and Hay Hooks,

No. 288 Monroe Street,

Bet. Jackson & Corleaus Sts., NEW YORK,

### WOOLLETT'S Old Homes Made New



View before Alteration. Reduced from Plate 4.



View after Alteration. Reduced from Plate 5.

Being a collection of Plans, Exterior and Interior Views, illustrating the Alteration and Remodeling of several Suburban Residences. WITH EXPLANATORY TEXT. By

WILLIAM M. WOOLLETT.

Fellow of the American Institute of Architects. Author of "Villas and Cottages."

One oblong volume, 7x11.....Price, \$1.50  
**Bicknell & Co.'s Specimen Book of 100 Architectural Designs.** This work shows a great variety of Plans, Elevations and Views from various publications, and is a very desirable book for builders and all who contemplate building. One 8vo volume, handsomely bound in cloth. Price, \$1.00

**Ames's Compendium of Practical and Ornamental Penmanship.** Containing forty-eight 11x14 plates, giving more than twenty complete alphabets, with numerous designs for Borders, Engraved Resolutions, Memorials, Testimonials, Monograms, Title Pages, etc., designed for the use of Draughtsmen, Artists and Penmen. By Dan'l T. Ames. Large 4to. Price, cloth.....\$1.00 Half leather and gilt.....\$1.50

**Guillaume's Interior Architecture.** Containing twelve folio plates, showing twelve Designs and eight Sections for Doors, Stairs, Window Finish, Mantels, Wainscoting, etc., and two Elevations for Dwellings in French and Italian Style. One folio volume, flexible cloth, post paid.....\$5.00

**Atwood's Modern American Homesteads.** Forty-six plates, 8vo, cloth. Price, \$1.50

Reduced from.....\$2.50 to \$1.50

**Woodlett's Villas and Cottages.** One volume oblong 8vo of forty 8x12 plates. Cloth. Price, \$3.00

**Gould's Carpenters and Builders' Assistant, and Wood-Workers' Guide.** Containing twenty-three plates, fully described. 8vo, volume, bound in cloth. Price.....\$3.00

**Cunningham's Architectural Details.** One large 4to volume, fifty-six plates. Price, \$10.00 to \$6.00

Reduced from.....\$10.00 to \$6.00

**Croft's Progressive American Architecture.** One large 4to volume, ninety-seven plates. Price, \$10.00 to \$6.00

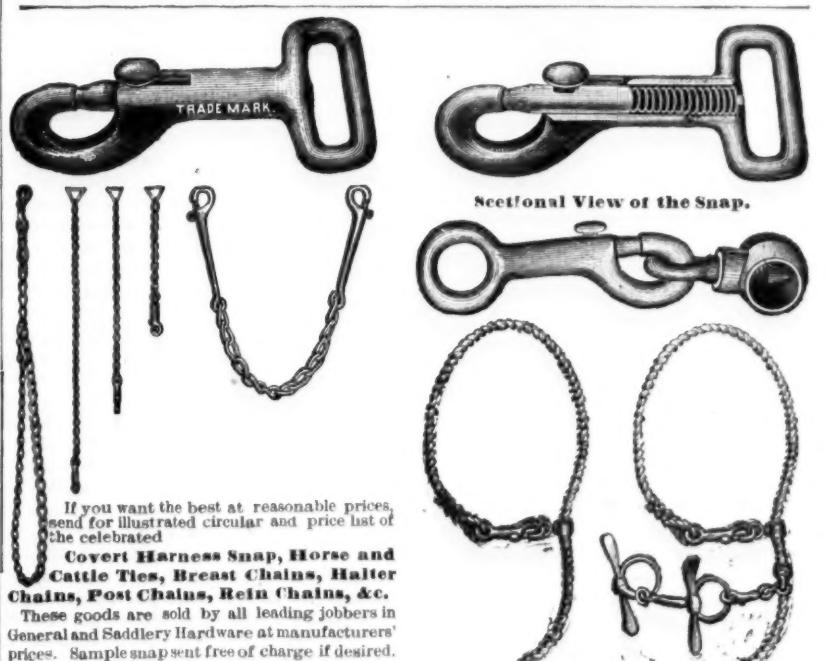
Reduced from.....\$10.00 to \$6.00

**Bicknell's Cottage and Villa Architecture.** Containing sixty-six plates (plates 1-66 W. and B. Buildings), showing Plans, Elevations, Views, Sections and Details of low priced, medium and first-class Cottages, Villas, Farm Houses and Country Seats. Also Specifications for Frame and Brick Dwellings, etc., etc. Drawings to scale. Price, post paid.....\$6.00

**Bicknell's Street, Store and Bank Fronts.** Containing twenty-two plates (plates 67-89 W. and B. Buildings), showing thirty-four designs of Street Fronts for Dwellings, Stores and Banks, including several plates of Details. Drawings to scale. Price, post paid.....\$4.00

**Bicknell's Public Buildings.** Containing

### DAVID WILLIAMS, 83 Reade St., New York.



If you want the best at reasonable prices, send for illustrated circular and price list of the celebrated

Covert Harness Snap, Horse and Cattle Ties, Breast Chains, Halter Chains, Post Chains, Rein Chains, &c.

These goods are sold by all leading jobbers in General and Saddlery Hardware at manufacturers' prices. Sample snap sent free of charge if desired.

Address  
**COVERT MFG. CO.,** Sole Manufacturers, Troy, N. Y.



# The Iron Age.

Metallurgical Review.

New York, Thursday, September 12, 1878.

DAVID WILLIAMS, Publisher and Proprietor.  
JAMES C. EAYLES, Editor.  
JOHN S. KING, Business Manager.

## RATES OF SUBSCRIPTION, INCLUDING POSTAGE.

IN THE UNITED STATES, BRITISH AMERICA AND SANDWICH ISLANDS.

Weekly Edition.....\$4.50 a year.  
Issued every THURSDAY morning.  
Semi-Monthly Edition.....\$2.30 a year.  
Issued the FIRST and THIRD THURSDAY of every month.  
Monthly Edition.....\$1.15 a year.  
Issued the FIRST THURSDAY of every month.  
Remittances may be made at our risk by post office money order, draft on a New York or Philadelphia bank, or in a registered letter.

### TO OTHER COUNTRIES.

	Weekly	Semi-Monthly	Monthly
Mexico.....	\$5.00	\$2.50	\$1.25
West Indies (all the Antilles)	5.00	2.50	1.25
South America (except Venezuela)	5.00	2.50	1.25
Venezuela.....	5.00	2.50	1.25
Central America.....	5.00	2.50	1.25
Europe.....	5.00	2.50	1.25
Australasia.....	5.00	2.50	1.25
Asia-India and East Indies.....	5.00	2.50	1.25
Japan.....	5.00	2.50	1.25
China.....	5.00	2.50	1.25
Other Countries.....	5.00	2.50	1.25

### EUROPEAN AGENCY.

We have established an office at B 3, American Section, Exposition Universelle, Paris, where advertisements and subscriptions are received and other business connected with our publications transacted.

### ADVERTISING.

One square (12 lines, one inch), one insertion, \$2.00; one month, \$7.50; three months, \$15.00; six months, \$25.00; one year, \$40.00; payable in advance.

DAVID WILLIAMS, Publisher,  
53 Reade Street, New York.

### PITTSBURGH OFFICE.

77 FOURTH AVENUE.  
JOS. D. WEEKS, Manager and Associate Editor.

### PHILADELPHIA OFFICE.

220 SOUTH FOURTH STREET.  
THOS. HOBSON, Manager.

### CINCINNATI OFFICE.

MERCHANTS' EXCHANGE.  
T. T. MOORE, Manager.

### SOUTHERN OFFICE.

EIGHTH AND MARKET STS., CHATTANOOGA, TENN.  
S. R. LOWE, Manager.

### BRITISH AGENCY.

The publishers of *The Iron Age*, 43 Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

### AUSTRALIAN AGENCY.

The American Hardware Company, Melbourne, are our agents for Australia. Sample copies will be mailed by them, free of charge, to any firm engaged in the trades we represent in Australia, Tasmania and New Zealand.

### CONTENTS.

**First Page.**—The Hub Friction Clutch. An Improved Tugger. Tire Fastenings. The Cost of Iron.  
**Third Page.**—Industry and Trade in the North of England.  
**Fifth Page.**—Industry and Trade in the North of England. (Continued).  
**Seventh Page.**—American and English Railways. The Monitor, Ohio, Furnace. Chinese Miners Making a Stand.  
**Ninth Page.**—Mining Items.  
**Eleventh Page.**—Glass Trade Items. A Workman's Version of the Strike in the Philadelphia Mills.  
**Thirteenth Page.**—The Outlook for the Iron Trade of the West. American Mechanical Genius.  
**Fifteenth Page.**—New Publications. American Exports of Hardware to Europe. Failure of the Gifford Iron Company. Rolling Mill and Furnace for the United States of Colombia. Russia Sheet Iron vs. American Planished. Death of George Dawson Coleman. Difficulties of the Madeira and Mamore Contractor.  
**Seventeenth Page.**—The Paris Exposition.  
**Nineteenth Page.**—The Paris Exposition. (Continued).  
**Twenty-first Page.**—The Paris Exposition. (Continued). An All-Steel Bridge. Fine Steel Drill Rods and Wire. Obituary.  
**Twenty-third Page.**—Trade Report. General Hardware. Iron. Metals. Coal. Exports. Imports.  
**Twenty-fifth Page.**—Old Metals, Paper Stock, etc. Philadelphia. Pittsburgh. Chattanooga. Boston. St. Louis. Cincinnati. Louisville.  
**Twenty-seventh Page.**—Baltimore. Richmond. Foreign. Our English Letter.  
**Twenty-ninth Page.**—Industrial Items. The Monetary Conference. Kimberly, Carnes & Co.'s Affairs. Recent Court Decisions on Mercantile Subjects. Labor Notes.  
**Thirty-first Page.**—The Iron Age Directory.  
**Thirty-third Page.**—New York Wholesale Prices.  
**Thirty-fifth Page.**—New York Wholesale Prices. (Continued).  
**Thirty-seventh Page.**—Philadelphia, Buffalo, Chicago and Pittsburgh Hardware and Metal Prices.  
**Thirty-ninth Page.**—Boston and St. Louis Hardware and Metal Prices.

The open-handed liberality with which calls for aid from the fever-stricken districts of the South have been responded to in the North and West, cannot fail to make a lasting impression upon those who give and those who receive. It will do much to erase from the popular mind all that yet re-

mains of the bitterness engendered by civil strife, and will reunite the South and the North by stronger ties than those of a common nationality or the bonds of political union and commercial intercourse. There is nothing sectional, nothing selfish in the impulses which dictate the response to calls for aid from the South. They have touched the heart of the nation, and the answer has been worthy of the American people. What we give is given freely, and with no other hope than that it may aid in saving life and alleviating the terrible sufferings of the sick. That it is received with a gratitude which can find no adequate expression in words, we have ample evidence. It is enough for those who give to know that they are contributing to the needs of communities afflicted with a misfortune so terrible that it cannot be realized until it is seen or experienced.

### The Outlook for the Iron Trade in the West.

The state of the iron trade in the West at the present time, or more properly on the 1st day of September, at which time most of our information was gained, is in some respects better and in others worse than at any time since the panic of 1873. Probably half the merchant iron and nails used in the United States are consumed west of the Alleghenies, and the condition of the trade in this section has an important influence on the trade of the whole country.

The feature of the trade which is not pleasant to contemplate is the increased number of idle iron works. We have no complete figures later than July 1 showing the condition of the coke and bituminous blast furnaces. At that date 40 per cent. only were in blast. Since then a number have blown out for various reasons, and we know of but one or two that have blown in.

Among the iron mills there is a still worse condition of affairs. Some of the largest and most important mills in the West have been closed by bankruptcy proceedings during the past few months; others have shut down because there was no profit, if a return of cost, in the prices ruling. In detail, the condition of the mills in the West on the 1st of September was as follows: At Pittsburgh all the exclusively hoop mills are running. Of the exclusively sheet mills, those with 68 out of 85 puddling furnaces are running more or less regularly. A number of the bar mills, or mills that make mostly bars and iron of similar character, make sheets also, and must be considered in estimating the condition of the sheet-iron trade. There are twelve bar rolling mills in operation in Pittsburgh and six are idle. The hoop mills are running about as usual, the product of hoops having been largely reduced by the stoppage of some large hoop mills in the Shenango Valley. The sheet mills are making between one-half and one-third of their usual product and the bar mills about one-half.

In the Shenango and Mahoning Valleys and neighborhood, the only mills making bars that are in operation are the Westerman, Atlantic, Middlesex, Brown, Bonnell & Co., and Akron. It is rumored that a Niles mill has started, but we have no positive information. The Youngstown Rolling Mill Company and Cartwright, McCurdy & Co., both hoop makers, are at work, as is the mill of L. B. Ward, making sheets. At Cleveland, the only iron mill running is the Lake Erie, and this works largely on forgings. At Cincinnati the Globe, Mitchell, Tranter & Co., Swift's and Dayton's are running single turn. At Louisville all the mills are idle. At other points on the Ohio below Pittsburgh, the Riverside bar mill, Etna, making bars and sheets, Whittaker, rolling sheets, and Moundsville, rolling hoops, all in or near Wheeling, are running, and so are the Burgess, Portsmouth, Aurora and New Albany. All others are idle. At Zanesville the Ohio mill is running single, and at Columbus, Hayden & Baker's mill is running light on cotton ties. At Terre Haute, the Wabash mill is running; at Milwaukee, the Milwaukee under its new management; at St. Louis, our latest information is that all are in except La Clede. We do not give the idle mills, but any one interested can very soon make out a list which will not be pleasant reading. Some of these mills are hopelessly idle until, in the readjustment of things, they get into other hands, and then they may be fit only for old iron. Others are not so bad off as this, but they will remain idle until there is more money in iron than there is any immediate prospect of.

In the nail trade there is not a mill at Pittsburgh making full time. Some have not turned a wheel for months; others have not made two weeks' time in three months. It is safe to say that on an average not more than 25 per cent of the capacity of the nail mills of Pittsburgh is utilized. In the Mahoning and Shenango Valleys, the Westerman, Brown, Bonnell & Co.'s and Falcon are the only ones running. At Wheeling, Steubenville, and the vicinity, only the Riverside and La Belle are running, though the Benwood and Bellaire are to start soon. Below Wheeling, on the Ohio, Clifton is idle, Belfont was to start about Sept. 1, and the Norton, Aurora and New Albany are running. In the other sections the Greencastle, Terre Haute and Jos. H. Brown, Chicago, are running. Belleville we are in doubt about, but it is probably in operation. To recapitulate. About half of the nail machines are idle, and those that are in operation are not averaging anything like full time.

Another unpleasant feature is the price of

iron. Forge pig sinks every little while in search of "bottom," but it is doubtful whether it has struck it or not. For common brands \$16 @ \$17 is not very inspiring. There is one bright feature in pig iron—red-short forge irons must be in good demand at remunerative prices. The stock is virtually nothing. Furnaces are not running on this grade, and what little is made by furnaces running on Bessemer is soon picked up. Before the winter is over we should not be surprised to see it at \$19, four months. The prices of merchant iron and nails are extravagantly low; iron, 1.60¢ @ 1.90¢; nails, \$1.90 @ \$2. This is lower than has ever before been touched.

Notwithstanding the blackness of this picture there are some bright spots for those mills especially which are now in operation. So many mills being idle makes more business for those that are in. The orders that have been placed with these idle mills must be taken elsewhere, and some mills report that they have not had as many inquiries for months. This is in some degree the explanation of the stories we hear of increased trade. It seems true, however, that there is really more inquiry for iron, but not so much more as the surface indications imply. The trade is divided among fewer mills, but the mills in operation are more than competent to supply the demand in the West, and it will be folly for a mill that for any reason has stopped to start again at present. We look to see an advance in "honest" iron—that is, iron containing no old rails, and but little cinder pig; but it will be a very small one, and more in the nature of a stiffening of prices than of a positive advance.

In nails, on the other hand, there is little present prospect of anything better. The fall trade is well advanced. The enforced or voluntary idleness of so many mills may cause a scarcity late in the fall, but this cannot be counted on with certainty. Nails are being sold only in small blocks now, and a scarcity might stiffen them to \$2 or perhaps \$2.05, but higher than this will set other mills to work and they will decline again.

In view of all the facts it would be unsafe to venture any predictions as to the future. Old rails remain as a disturbing, uncertain element in all calculations. There is also much uncertainty as to what will be done with the mills that are idle through bankruptcy. We hope the next few months will settle some of these uncertainties and make the way out of present difficulties clearer.

### American Mechanical Genius.

The London Times, in its issue of August 22d, publishes an article which has been given considerable currency in this country, in which an attempt is made to analyze American mechanical talent. Although in many respects fair, there are abundant exhibitions of the unfairness which is so characteristic of the English newspaper writer in discussing American matters. We make the following extract, concerning which we have something to say:

Fulton built the first successful steamer on American waters; but all the latest and most important advances in steamship building are English, and the great mass of the steamers afloat are English. The first monitor was American; but the puny craft of that construction across the Atlantic would all go down before one of the last English build; and though Rodman and Dahlgren instituted the experiments to which we owe most of the present knowledge of the power of artillery and gunpowder, English artillery has left the practical transatlantic results out of the chance of competition.

Fulton built the first successful river steamer it is true, and it is also true that no nation on the face of the globe has any steamers in use upon smooth waters that can be compared with such boats as the Rhode Island, the Bristol, the Providence, the Massachusetts, the Drew, the Saratoga, the Mary Powell and the St. John. We not only built the first vessel of this class, but have kept so far ahead that other nations have hardly shown specimens that were worthy to be included in the class. America, too, sent the first steamship across the Atlantic years before the much-lauded Sirius and Great Britain sailed. So long as we were building ocean steamers we kept ahead in the race. Up to the time when the change from iron to wood disabled American commerce by bringing in a material which we were not then prepared to make cheaply, American naval architecture was at the front. In model our vessels were the best that had ever been afloat; in speed they have only recently been beaten, and in cargo capacity they were not rivaled. Probably to-day an iron vessel built upon the Adriatic's model, and with a screw propeller, would show our English friends that in speed, seaworthiness and comfort their shipbuilders still have much to learn. Many of those old steamers, stripped of their engines and rigged into sailing vessels, are to-day making surprisingly rapid voyages, and competing profitably with the English steam trade or freight boat, as she is sometimes called. In economy and speed we have ocean steamers running on Central American lines that show as good records as the crack boats upon the transatlantic lines. It is only two months since we examined the logs of some of the Southern lines of steamers, in which consumption of fuel and speed were all that could be desired, while the indicator cards were in several instances finer than any which we have seen from the famous White Star line, or in fact from any other engines. Our ocean steamers may not be large in number, but they are certainly not behind in any of the points by which a successful ship should be judged—that is, speed, cargo,

capacity, economy and strength. We can at least boast that we do not build ships of plates through which a man may drive the toe of his boot, nor do we produce steamships which turn over when first trusted to the water and which require tons of brickwork in their bottoms to keep them upright. "He laughs best who laughs last," and America will have something to say yet about the steam-carrying trade of the world.

England taught us how to build yachts, and we have proved apt scholars. As yet we are ahead in that line, and so far as we can learn, have not been behind since the America's victory in 1851. Nineteen years after that race the same old vessel had the honor of being one of six vessels which showed themselves superior to the crack English yacht, and to-day America boasts a dozen yachts that can sail faster than any vessels afloat. We think the facts will warrant the statement that we are still ahead in the matter of yacht building. In fast sailing vessels we have yet seen no record that approaches that of the famous United States ship Idaho. Even the Mary Powell's 26½ miles per hour, reported by Dr. Vander Weyde, was exceeded, we believe, although we have not a copy of the Idaho's log at hand.

It is true that the first monitor was a puny craft, but when she was built she had not her equal afloat, and when the war closed no nation in the world had a navy which in speed, weight of metal and thickness of armor could at all compare with that of the United States. War over we stopped war's waste and built no useless ships. England followed in our footsteps, but it is questionable whether she has improved upon the American monitor as built at the close of the war.

The Captain turning over and going down at sea does not look like it, and such unhandy craft as the Iron Duke and Vanguard do not convince us. From the official reports upon the Devastation, with her top-heavy turrets, we are not inclined to think that England has made any very remarkable improvements in fighting ships. Unless the ironclads of the British navy show themselves more handy in action than they have hitherto done in practice, some of our old American monitors, in spite of their thin plating, would not stand a bad chance in action with them. The truth is, there is hardly an ironclad in the British navy that can be considered a satisfactory ship; and this, too, after so many years of experimenting upon the "puny" American monitor. When the Prince of Wales made his famous Indian tour the boilers of the Serapis, the ironclad on which he made the voyage, foamed so that her speed was scarcely greater than that of a harbor tug.

In guns and gunpowder Great Britain, at the close of our civil war, began where we were ten years before. In gunpowder she has learned nothing which our War Department could not have told her in 1865, while in guns she has just reached the size we were finishing as the war closed. In two years and a half or three years of war we stood at the head of the world in guns, ammunition and artillery generally, and if occasion comes it is not boastful to promise that we shall again undertake to show the world the heaviest and most powerful guns ever used in war. America has more than once revolutionized the art of war, and so long as we had to fight we kept the front rank. We may note here that the use of the rifle, the use of sights upon guns at sea, the introduction of the interchangeable principle of small-arm manufacturing and the use of the metallic cartridge, may all be said to be of American parentage. In the manufacture of small arms we are certainly the first nation in the world, and in metallic cartridges we have the largest share of the world's consumption to provide for. We have said enough to show that America does not invent and leave other nations to perfect. In more than one notable instance America has been followed at a very long distance. The Morse alphabet is one of the most wonderful and valuable inventions given to the world in modern times; yet in Europe, when it was adopted, changes were introduced and an attempt made to simplify it which only resulted in making the characters longer and increasing the time necessary for transmission.

If we turn to labor-saving machinery, we find that our substantial progress is in no respect behind that of the most enterprising nation of the world. We are not only sending this machinery abroad in large quantities, but we know how to use it so well that our manufacturers are competing with those of Europe in nearly every market of the world. It is simply folly to assert that our mechanical talent finds its limitations in suggesting crude ideas which other nations utilize and bring to their highest application. England is learning from unpleasant experience that we have become formidable competitors for her foreign trade, and that we have something to export besides crude inventions which we do not know how to improve or utilize. Can it be that the London Times is whistling to keep up the courage of British manufacturers?

Very few of those connected with the iron trades of this country have considered it possible that for many years to come there would be an export demand for any considerable amounts of American iron in the form of pigs and bars. The facilities for working it and the expense attending the same would be so great in countries to which we look for trade, such as South America, the Pacific islands and the West Coast, that it would seem to be much more profitable for these countries

to buy the finished product. We have also believed that England could sell iron in these forms so much cheaper than we, and especially that she could get so much lower freights, that we have expected but little trade in these lines. During the past two weeks, however, several orders for merchant iron have been received in Philadelphia. One mill has received an order for 90 tons of bar, rod and band iron from a Valparaiso house, while another has 25 tons of galvanized and corrugated iron roofing on its books for the same house, and an order for 300 tons galvanized iron is to be placed. Other orders are for foundry pig iron and one for 40,000 fire-brick for a copper smelting furnace at Valparaiso. "These are the first orders for iron which have ever been received in this country," says a Philadelphia gentleman interested. "Our recent commercial missions have proved that we can undersell the English, who have hitherto monopolized the market, both in merchant, band, bar, sheet and even pig iron. The products 'are sold in South America by the English 'at very high rates, while the quality will 'not favorably compare with our own productions. I anticipate that this will prove 'a new and rich opening for the iron men. 'There is also a good prospect for the car-wheel makers. Prices there are 100 per cent. above what the wheels are sold for 'in this market. The first order has already been received here, and the goods 'will be shipped hence in a few days.' It is understood that importers of English iron at Valparaiso have charged a very large profit, and that American iron can be profitably sold at much lower figures.

The heavy excess of our exports over our imports has completely stopped the flow of gold from this country to Europe, and brought back our bonds in such amounts that less than 20 per cent. of the government bonded debt is now held abroad. This has caused such a disturbance of the European market as to create considerable alarm. A London special dispatch late last week says: "The advance of the rate of discount 'by the Bank of Germany to 5 per cent. is 'regarded as another evidence of the grave 'disturbance in the monetary affairs of Europe which is to be apprehended in consequence of the complete cessation of the 'supply of gold from the United States, and 'the strong probability that the latter in the future will draw gold in large quantities 'from Europe. The Bank of England has 'sought to check this outflow of gold by 'advancing its rate to five. Germany now 'follows by an advance to five, and a further advance by the Bank of England is 'predicted. The supply of gold outside the 'amount hitherto received from America 'will not be sufficient to make up the annual wastage of the precious metals by 'handling and their consumption in the 'arts, and an era of dear and scarce money 'is apprehended." This is better for us than a steady drain of coin to pay a foreign indebtedness, and nothing could more completely indicate the wisdom of protection to domestic industry which has rendered this change in the course of the nation's foreign trade possible.

The letter on American exports of hardware to Europe, which we print on another page, is given for what it is worth. We have no doubt it is written in good faith, but we cannot say that we agree with it. The point of the letter seems to be that the writer wishes to discourage the efforts of manufacturers in this country to sell direct to European dealers, by showing how much better it is to distribute their goods through houses regularly established on the other side. If there is any objection to an effort on this part of the manufacturer to introduce his own goods, it is because he often makes mistakes in his attempts to reach foreign dealers. It may be cheaper and better for him to do his general distributing through resident "factors" rather than by establishing agencies of his own, but we question if any one will introduce his goods in the first instance as well or as thoroughly as he can do it himself. If he sends an incompetent or dishonest "drummer" to represent him, he makes, of course, a serious mistake. We consider it of the greatest importance, however, that the manufacturer for export shall make himself personally familiar with the wants of the markets he undertakes to supply. This he can only do by going there himself or sending a shrewd, practical representative. There is much to be said on both sides of this discussion, and our correspondent only presents one side.

Secretary Sherman's order to the United States Treasurer, issued September 7, means that, so far as silver is concerned, specie payments are about to be resumed. It authorizes the issuing of any amount of silver dollars which may be called for in exchange for greenbacks. We do not see why anyone should want to exchange convenient greenbacks for inconvenient silver dollars, but anyone who wishes can do so to any amount. In point of fact no one wants these clumsy coins, but it is some satisfaction to know that our once despised greenbacks are exchangeable for them. If, as is probable, this does not have the effect of putting the silver dollar in circulation, Mr. Sherman has but one means left of getting rid of them, and that is by paying them out for the ordinary expenditures of the government. He has distinctly said that he would not use them for the paymen-



of interest on the public debt, and as he is not required by law to do so his decision is final. Instead of "building better than they knew," the advocates of the silver bill did not build as well as they supposed they had.

If it be true, as stated by the able Paris correspondent of the London Times, that the American delegates to the International Monetary Conference have dispelled the idea that the Bland bill was designed to the prejudice of the bondholders, they have done our country an incalculable benefit, and this alone is worth all the cost. It is impossible without actual contact with foreigners, and Englishmen especially, to realize what a stain the Bland bill has made upon our reputation for honor and fair dealing in the estimation of many of our best friends. The repudiation of their indebtedness by many of the Southern States, and the millions lost by the failure of railroads to meet either the interest or principal of their bonded indebtedness, had left the impression that in financial matters our people were not given to following the dictates of honor; but faith was still placed in the honor of the general government. When the Bland bill passed, however, very many lost faith even in that. The American correspondents of English papers, whose only instructions in many cases seem to be, judging from their articles, "Write America down," aided this feeling. "This is one secret of the return of so many bonds to this country. The readiness of our people to take them had begun to give olders abroad an idea that after all they might be mistaken, and now this is confirmed by the words and assurances of our delegates to the conference. Every one who values the good name and honor of his country can but rejoice at this result.

In our issue of last week we referred to the attack made by the Amalgamated Iron and Steel Association on the use of old rails. We learn that in the case at issue the workmen have weakened and asked that the notice demanding an advance be returned to them, which has been done. The work of stopping the use of old rails seemed too great an undertaking. The Riverside Works, where the notice was served, is only one of a large number of works in different parts of the country East and West using old rails, and the attempt to enforce the action of the convention all over the country meant too much of a fight. It is probable that the strike at Philadelphia had some influence on this action. Two strikes at one time with more in prospect were more than the friends of the Association could carry. We do not generally sympathize with movements of this kind, but it cannot be denied that anything which puts an end to the use of old rails would be a benefit to the whole trade.

Our Paris correspondence this week, including an addition to the partial list of awards to American exhibitors, will be found very interesting.

#### New Publications.

THE GRASSES OF TENNESSEE, INCLUDING CEREALS AND FORAGE PLANTS. By J. B. Killebrew, Commissioner of Agriculture, Statistics and Mines.

Col. J. B. Killebrew has given us another of his valuable practical treatises which cannot fail to be of the greatest public benefit. The work might better have been entitled "The Grasses and Cereals of East and Middle Tennessee, Western North Carolina, North Georgia and Alabama and Southwest Virginia," because these regions are essentially alike in all their products, while West Tennessee and a portion of Middle Tennessee are flat prairie, which their owners think is good for nothing but to grow cotton. When the war was over, and for several years thereafter, the entire iron region of the South was almost wholly dependent on the North for hay. The article commanded as high as \$40 per ton, and was not lower than \$25 as late as 1872. Meantime the few furnaces and mills and the railroad building enterprises had stimulated the home product considerably, and the competition of home-raised hay was rapidly bringing prices down to a fair figure. Now little, if any hay, is imported South of Nashville, and considerable is shipped every year from the Tennessee valley and its tributaries to the cotton belt. There was a good supply in all the markets of East Tennessee last year at 75¢ to 80¢ per hundred pounds, and at about \$12 to \$14 per ton by the car or boat load. To encourage this industry and improve the quality of the product by the introduction of better varieties and their better cultivation, is the object of Col. Killebrew's book so far as it relates to grasses and forage plants. The work is both scientific and practical in its scope. The botanical history, character and name of each grass or plant treated, are clearly set forth, and their practical uses are given in a style readily comprehensible by intelligent farmers, who are the only ones of their class that read books.

The Southern iron region is on the eve of a renewal of its industries on a much enlarged scale. The items of forage for animals and cheap and wholesome meats are of the first importance in a region depending for its development on the production of heavy minerals and metals. The food supply in the Southern mineral belt has been abundant for several years, without depending for any portion of it on the North, and for two years past prices have been as low as in any market in the country. Col. Killebrew's book appears at an opportune moment. It will serve to assist in carrying forward the many improvements in grass, grain and corn farming in the rich valleys of his State, and will indirectly aid the advancement to a higher type of agriculture in all departments.

We may here properly remark that the owners of the Southern iron and coal region

especially owe Mr. Killebrew a debt of gratitude. Though an official of Tennessee, he has done very much to spread abroad in this country and in Europe a correct understanding of that entire section covering mines of coal and iron. His maps have been drawn with great care and have shown remarkable accuracy. His descriptions have been lucid and dignified, and calculated to impress the reader with the conscientious character of the author. He has had his reward in the confidence of his fellow citizens at home, as well as of those who have been induced by his essays and books to visit the South and test the accuracy of his statements by personal observation. The South would be better off if more of her really solid men embarked in projects calculated to attract capital and emigration to that section. At present and in the past that sort of work has, unhappily, been left too much in the hands of adventurers and speculators. But the fact that Tennessee sustains one really scientific and practical thinker and writer in that department, shows that one State at least appreciates the value of the kind of work all of them should do if they would rival the West and Northwest in attracting the kind of emigration needed to build up and enrich their section by developing its varied capacities, agricultural, mineral and manufacturing.

#### American Exports of Hardware to Europe.

To the Editor of the Iron Age.—DEAR SIR: Permit me to contribute a little to the export question, which you have so conspicuously put forward in your valuable paper. I appreciate the efforts which have been made in this direction as a healthy remedy to relieve the home market of some of its surplus production, but much of what was said on that subject is either willful exaggeration or lack of knowledge on the part of persons who believe the best service they can render their country is to give a glowing report regarding prospects of American manufactures abroad. It is chiefly to the consular reports that I refer, as they contain a good many erroneous statements. Any one who has made it a business for years to study the leading markets of Europe must smile in reading them; they are, with the exception of one or two, far above the mark, and contain a good deal of nonsense. Speaking of Europe and referring to hardware, tools, agricultural and kindred trade, statistics show, no doubt, a very large increase in our exports, but when this branch of trade is spoken of as being in its infancy, and if consuls say that many countries are open to purchase American wares if the manufacturer will only come and show them, they are all wrong. I venture to say that the fever for American goods is slowly dying out and will be over before the close of another year; experimenting has been going on in a large way, many have got through with it and matters are fast settling down. A certain class of goods have been sold, and by the lively competition of the many firms who are now engaged in export, have been well distributed to every small ironmonger in Europe. There they stay as an ornament to the show-window as long as they are new; but as only a part find sale the balance goes among hard stock. Several years ago almost anything new would sell, and even without consumption by the public it takes a large amount to fill the retail shops of Europe. If statistics could go into these details a heavy amount would certainly be found to go under this heading of our export tables. Dwelling on such goods that had a success beyond the show windows of ironmongers, the time is near at hand when the capacity of the American manufacturer will be put to a severe test by European competition, which is wide awake, and I fear that some makers of such staples are even now pretty well crowded. Yet I have full faith that most of them will by proper management hold their own, and some may even increase, but not if they look after their business in the way in which it is being done now. The American drummer (and there is a rare lot over here now) is at a heavy discount, and many leading houses in England who made a start on American goods have dropped them and will not touch them again. The letter written some time ago, giving a true picture of the American drummer in Brazil, applies to a certain extent to Europe. Lack of judgment, little or no knowledge of the country, no knowledge of the language and a desire of immediate results—immediate orders—cause the American who comes to sell goods to commit many faults, and though they are not all of a nature to injure the honor of the house he represents, they are certainly calculated to seriously affect the future development of American trade in Europe. Go to Birmingham or Wolverhampton factors and you can hear many incidents of an American traveler's ways. For example, the representative of a house comes over here and makes a tour through Ireland, and talks many a small or large house (he will see them all) into ordering; in most instances he talks him into ten times as much as his legitimate wants amount to by holding out higher discounts. If the dealer's neighbor is sharp he can buy a small quantity for the same price. By the time the American traveler is through with his trip he finds out that Birmingham is after all about the best place to sell goods, and of course he claims to come straight from New York. Anxious for an order, he will give half a dozen firms the agency if they will only buy. Nor does he hold to a price. He feels his way, and if he should happen to take orders too quickly (not much danger of this now any more) he will make a third one pay more, or the other way. A Birmingham agent only told me recently that he was offered an article with the promise that he should have it 7½ per cent. lower than any other house if he ordered a certain quantity, and anxious to do trade he went to secure a few orders ahead from others he used to supply, with an intention of buying the lot, but was sorely disappointed, as he found that they had actually given the same party their order for small lots at a less price than was offered to him. Now, all this will not do. The American maker cannot hold his direct trade with his Irish customer. In the long run he will lose

him and the Birmingham factor besides, because the latter is disgusted with the way in which he is treated. The result is that the trade will go to some other house, or it will go back to English firms. I could point out many more mistakes, but as your space is valuable I will conclude with a few more words, summing up the few points I have touched.

American trade with Europe in manufactured goods will largely simplify itself and settle down to some few specialties, and by intelligent management trade in them can be extended so as to cover fully such trade as on the other hand will be lost. There are plenty of houses in New York, Philadelphia and Boston who make export a specialty, and have their agencies and branches all over Europe, and who also have quite a staff of travelers who are familiar with the wants and institutions of their respective country. Competition also is so keen among them that there is really no need of American makers going abroad; but if they think otherwise let them look after competent men who are not so much in love with their own language that they think it unnecessary to learn any other; let them take men of experience and knowledge.

Yours respectfully, V—B.  
BIRMINGHAM, Aug. 27, 1878.

#### Failure of the Oxford Iron Company.

The Oxford Iron Company, of Oxford, N. J., of which Mr. S. T. Scranton is president, made an assignment on Friday last to Mr. B. G. Clarke, No. 52 Wall street, for the benefit of their creditors. Mr. Clarke duly qualified to receive the trust, Messrs. Moses Taylor and Samuel Sloan becoming his sureties. The liabilities of the company, it is said, are between \$2,000,000 and \$3,000,000, of which about \$700,000, probably secured, are due in this city. One of the principal creditors here is the Delaware, Lackawanna and Western Railroad Company, which holds collateral securities for the indebtedness. Among the other heavy creditors of the Oxford Company are banks in Scranton, Wilkesbarre, Easton and Belvidere. The minor creditors number nearly 400. The assets of the company are nominally valued at about \$3,000,000, but their actual worth cannot be stated accurately at present. They include two furnaces and a nail mill at Oxford, together with all the iron mines at that place, which were considered very valuable a few years ago. S. T. Scranton & Co. hold \$700,000 of the company's bonded debt, and \$180,000 are held by other parties.

The works and mines of the Oxford Iron Company have a very interesting history. A furnace was established there in 1773, and though a few had been built in different parts of the country, this is the oldest which has remained in good working condition. There is a pig of iron in the office which bears the date of 1755, and there are cannon balls known to have been cast in the furnace during the old French and Indian war. During the revolution the furnace was under the management of Daniel Robidan, a member of the Federal Constitutional Convention, and afterward Surveyor-General of the United States. An attempt was made to cast cannon of the small caliber in use in those days, but it was not successful, and only solid shot were cast for the Federal army. The present plant is large and valuable, including two stacks and mills for the manufacture of merchant bar, spikes, nails, bolts and nuts.

Fortunately for the workpeople the company's embarrassments have not thrown them out of employment. On Tuesday work was resumed by direction of Mr. Clarke, who took the responsibility of ordering this step after a few hours' study of the books and accounts. One of the two mines has been worked for 134 years without showing any diminution of richness or productiveness. Neither of them is more than a quarter of a mile from the furnaces, and although they are shaft mines 200 feet deep, the ore is carried right to the furnace door on gravity roads. It is estimated that the ore for a keg of nails delivered at the furnace door does not cost more than six cents. The foundries, rolling mills and furnaces are all of the most approved construction. In fact, the only supply necessary to the manufacture of the iron that the property does not furnish is coal. The real estate overlying the Oxford ore beds figures in the schedule of assets as costing \$250,000. There are over 8000 acres of land in the tract, and much of it is so productive for farming purposes that it sells for \$100 an acre and upward. The improvements in the shape of rolling mill, nail mill, two furnaces, one of which was run by water-power in 1743; flour mill, mining machinery and dwelling and store houses, &c., are estimated at \$1,079,453.59. There are bonds, mortgages and accounts receivable which increase the assets to \$1,720,345.78. Against this, including \$493,000 of stock actually issued; \$641,000 first and second mortgage bonds, and bills and accounts payable, \$1,418,634, are liabilities amounting to \$2,675,376. The brothers S. T. and Charles S. Scranton and their wives have turned over to the receiver all their property that had not already been included in the iron company.

The work in the future will be under the charge of William H. Scranton, son of the late G. W. Scranton, of Luzerne county, Pa., as Receiver Clarke's general manager.

Rolling Mill and Furnace for the United States of Colombia.—Messrs. Cook & Beggs, of this city, are making the entire plant of a rolling mill and blast furnace ordered for the United States of Colombia. Until now there has never been a rolling mill in that country, but in the progress of internal improvement extensive works of this kind are now in contemplation, to cost about \$200,000. The parties concerned are A. Ramoz, an accomplished civil engineer, Levi York and Chas. Brown, the two latter formerly of New York. Mr. Ramoz visited this city a year ago to get a bridge built and purchased some machinery. At the same time he made the acquaintance of the two gentlemen now associated with him in this important undertaking, and who are jointly under contract with the government to produce bar iron from the ore. The

work ordered in New York amounts to about \$100,000. Messrs. Roots Bros. & Co., of Connorsville, Ind., are making the blowing apparatus for the furnace.

#### Russia Sheet Iron vs. American Planished.

The success which has attended the persistent efforts of one of the leading manufacturers of Pittsburgh to produce a grade of sheet iron in every way as good as the Russian and cheaper in price, deserves the generous recognition which consumers of sheet iron have for years past been pleased to give it. When it is remembered that the planished iron industry was begun under great difficulties, and that the product had to overcome a strong prejudice in favor of Russia iron which had been strengthened by previous unsuccessful attempts to manufacture such iron in this country, the success of the planished iron industry becomes all the more conspicuous and reflects the greater credit upon those who have overcome so many and serious obstacles. When the manufacture of this grade of iron was begun here there were very few who believed that it would become an established industry or that the product would meet the wants of consumers of Russia iron. Now there are but few who do not find the American article preferable to the imported. This is one of those triumphs of enterprise and perseverance of which we find so many in the history of American manufactures.

We have been led to these remarks by having had our attention called to an effort on the part of certain persons interested in the sale of Russia iron to further their own interests by disparaging the American planished iron, now almost exclusively used in place of Russia. As the means they have taken to do this are unfair and involve a misstatement of facts, we think it only just to a very promising domestic industry to say a few words in its favor. Two circulars issued by prominent metal brokers have been brought to our attention which serve as illustrations of what we mean by unfair efforts to disparage the American planished iron. One of these circulars, speaking of imported Russia iron, says: "The rise which has lately taken place is not speculative, but simply on account of small stocks and the unprecedented demand for genuine Russia." "It would seem as though, after a trial of several years, the imitation has been found 'wanting.' The other circular contains the following: "Russia iron has advanced fully ½¢ per lb., owing to reduced stocks and no important arrivals expected before the middle or last of September; and more particularly by the unexpectedly large demand, inasmuch as the patent 'planished iron, after three years' trial, is found not fitted for general use." From the coincidence of date and statement it would be fair to conclude that these circulars were inspired from a common source, and that they are part of an effort now making to bolster up a declining importing trade. This effort is perfectly legitimate and proper in itself considered, but it ceases to be either the one or the other when recourse is had to misstatements calculated to prejudice the trade against an article which experience has shown to merit their entire confidence.

So far as the statements above quoted apply to American planished sheet iron, they are absolutely false. It has not been "found wanting" after several years' trial, nor has it been found unfitted for general use. On the contrary, instead of the reported increase in the consumption of Russia iron being due to a falling off in the consumption of American planished iron, we find upon inquiry that the production and sale of the American iron during the first half of 1878 exceeded that for any previous six months by 3000 packages. The facts regarding this iron may be briefly stated as follows: Its manufacture was begun in 1873, at a time when Russia iron controlled the market without competition. For some years the importation of Russia iron ranged from 20,000 to 25,000 packages per annum. This year the sales of American planished iron will amount to between 15,000 and 20,000 packages, while during the past three years the importation of Russia has not averaged 1000 packages per year. When it is remembered that this amount is exactly one twenty-seventh of the largest amount of Russia iron imported in any one year, it requires a stretch of the imagination to believe that the statements above quoted have any foundation in fact.

In saying that the quality of the American planished iron is in all respects equal to the imported Russia iron, we merely record the experience of consumers, of whom there are large numbers among our readers. The stove trade will remember the resolution adopted by the National Association of Stove Manufacturers, at their meeting on the 16th of January last, in which the American planished iron was described as perfectly meeting all the requirements of that trade. Our readers will also remember the fact, to which we have before called attention in these columns, that every locomotive made in this country has its boiler jacketed with American iron, including those built by the Baldwin Locomotive Works of Philadelphia for Russian railways. It is now used by every important railway in this country, and by some exclusively. Among the number are included the New York Central, Pennsylvania, Baltimore and Ohio, Reading, Fort Wayne, Pan Handle, Lake Shore, Michigan Central, Chicago, Burlington and Quincy, St. Paul, Rock Island, Northwestern, Vandavia and others we know of. The approval of these corporations only echoes the verdict of dealers and smaller consumers, and there are many in the trade who do not hesitate to say that for general use the American iron is better than the Russian iron. In the face of this testimony, which is spontaneous and disinterested, the contrary statements of interested parties in trade circulars are not, we think, likely to carry much weight. We have little reason to suppose that the importing trade in Russia iron will be revived by any such means. The time is past when the fact of foreign manufacture gave an article a prestige in the American market. Other things being equal, the home product now has the preference, and in the case of Amer-

ican planished iron in competition with Russia, other things are equal.

#### Death of George Dawson Coleman.

George Dawson Coleman died at Lebanon, Pa., on the 10th inst. He was born in Philadelphia January 13, 1825, and after attending school there and in Princeton he was admitted to the collegiate department of the University of Pennsylvania, from which he graduated in 1843. Like the four generations of his family who had preceded him, he engaged in the manufacture of iron, and on attaining his majority associated himself in business with his brother, and built and operated in North Lebanon what were then and are still known as the "Lebanon Furnaces." In 1852 his brother withdrew from the business, and in all the years intervening it has been conducted by the subject of this sketch, under whose personal supervision and direction it grew from an experiment to an established success.

From inherited property and personal effort and enterprise Mr. Coleman came to be recognized as one of the wealthiest men in the State. He was also one of the most liberal in the Commonwealth and gave freely of his riches. He spent \$10,000 to equip the Ninety-third Regiment Pennsylvania Volunteers, and built a handsome chapel near Lebanon for the accommodation of those employed in his furnaces there. The lot on which "St. Peter's House" stands, at Front and Pine streets, was a gift from him. Toward his employees he was always liberal and gave largely of his means in support of many deserving charities throughout the State.

During the rebellion Mr. Coleman's iron works turned out large quantities of shot and shell for the government. His grandfather had made shot for use by Washington during the Revolution, and his father manufactured similar missiles for use in the war of 1812. Mr. Coleman used to refer to these facts with some pride, saying that though neither his ancestors nor himself had ever harbored warlike feelings, it was a source of satisfaction to know that material of their manufacture had helped to establish and twice preserve the country.

Mr. Coleman was engaged in many business enterprises in Pennsylvania and concerned in a number of corporations. He was president of the First National Bank of Lebanon, was one of the earliest officers of the American Iron and Steel Association, and was either a stockholder or director in a score or more of railroads, banks and other organizations of similar character.

#### Difficulties of the Madeira and Mamore Railroad Contractor.

The Philadelphia North American says: One of the most discouraging features of journalism in this country is the eagerness with which some reputable newspapers have joined in the abuse that has been heaped upon the Messrs. Collins since they undertook the construction of the Madeira and Mamore Railroad in South America. In the first place, their signing of the contract was in itself enough to stamp them as among the most enterprising and energetic men in the country. The work which they agreed to do had been given up by English contractors as impossible, and from the first they met with nothing but discouragement and disaster which would have disheartened any but the most determined men. The loss of the Metropolis was most unjustly laid at their door; and for every day's delay in the transportation of supplies and material they were blamed, both by the press and the public. Then when they had given an earnest of their determination to carry through the work that they had undertaken, they were met by all the hostility that might have been expected from the foreign contractors, who could ill afford to see the work that they had pronounced impossible accomplished by Americans. The Messrs. Collins were unable to get the money that had been deposited to secure them, and although they had made a deposit of \$200,000 of their own money as a guaranty, the English bondholders and the ex-contractors put every possible obstacle in their way to prevent them from getting the advances which they had every reason to expect. Crippled and hampered on every side, they nevertheless went ahead, and have already built the worst part of the line—that which the English said it was impossible to construct—and have pushed forward without wavering. All sorts of stories have been set on foot about their negligence of human life and their cruelty to their employees. As if it was for their interest to pay two or three hundred dollars each to get men out there and then have them starve. All this time the tone of the press has been steadily aggressive, in spite of the fact that letters from the real workers have been full of confidence; and while admitting the work was harder and the climate worse than they had anticipated, the writers insist in saying that the contractors had done the best they could, and that the tales of the sickness and mortality had been grossly exaggerated. The fact is that the Messrs. Collins undertook a contract that had gone begging all over the world on account of the immense difficulties attending its fulfillment, and they have gone ahead with it in spite of all the discouragement that has been heaped upon them. We believe that they will carry it through, and that the way will then be opened for American mechanics and American enterprises of all kinds. They can afford to bide their time, but it is thoroughly discreditable that they have at the same time to encounter the opposition and abuse from the American press that they expect and receive from the English newspapers.

The new St. John, New Brunswick, rebuilt since the fire, both for the beauty and solidity of its structures, is a finer city than the old. There are now erected, or in course of erection, 352 stone, brick and brick-cased buildings of an aggregate value of \$3,456,200, and 530 wooden buildings valued at \$739,332, making a total of 883 buildings of all kinds, with a value of \$5,195,532. New buildings worth \$100,000 have also been erected outside the burnt district.



# AMERICAN SCREW CO.,

Providence, R. I.,

**MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,  
AND INCREASING THE ASSORTMENT DAILY.**

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a **lower cost to the consumer** than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

## INTERNATIONAL EXHIBITION. PHILADELPHIA, 1876.

(No. 235.)

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

PHILADELPHIA, November 8, 1876.

### REPORT ON AWARDS.

Product: Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz: **Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.**

G. L. REED. Signature of the Judge.

Approval of Group Judges.

Daniel Steinmetz,  
Jas. Bain,  
Chas. Staples,

G. L. Reed,  
J. D. Imboden,

J. Diffenbach,  
Dav. McHardy.

A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.  
Given by authority of the United States Centennial Commission.

[L.S.] J. L. CAMPBELL, Secretary.

A. T. GOSHORN, Director-General.  
J. R. HAWLEY, President.



After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

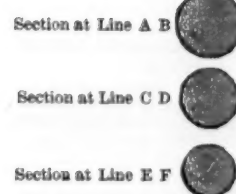
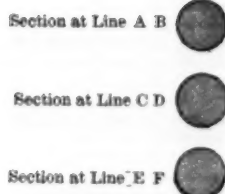
The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade-mark, which is also secured to us.

The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all



Estimated to be FIFTY PER CENT. stronger than a Screw as Commonly made.

the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

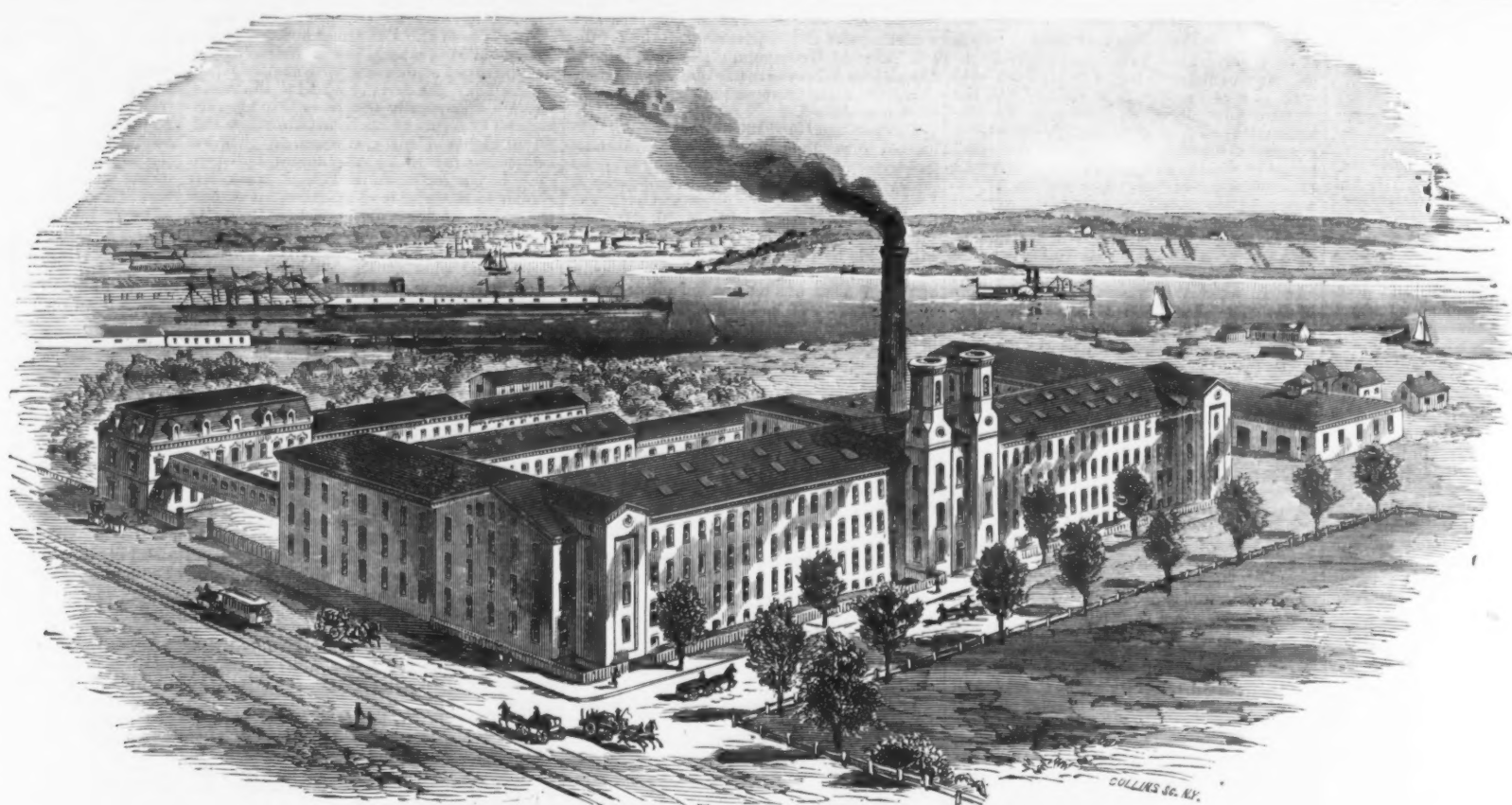
It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.

### CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."

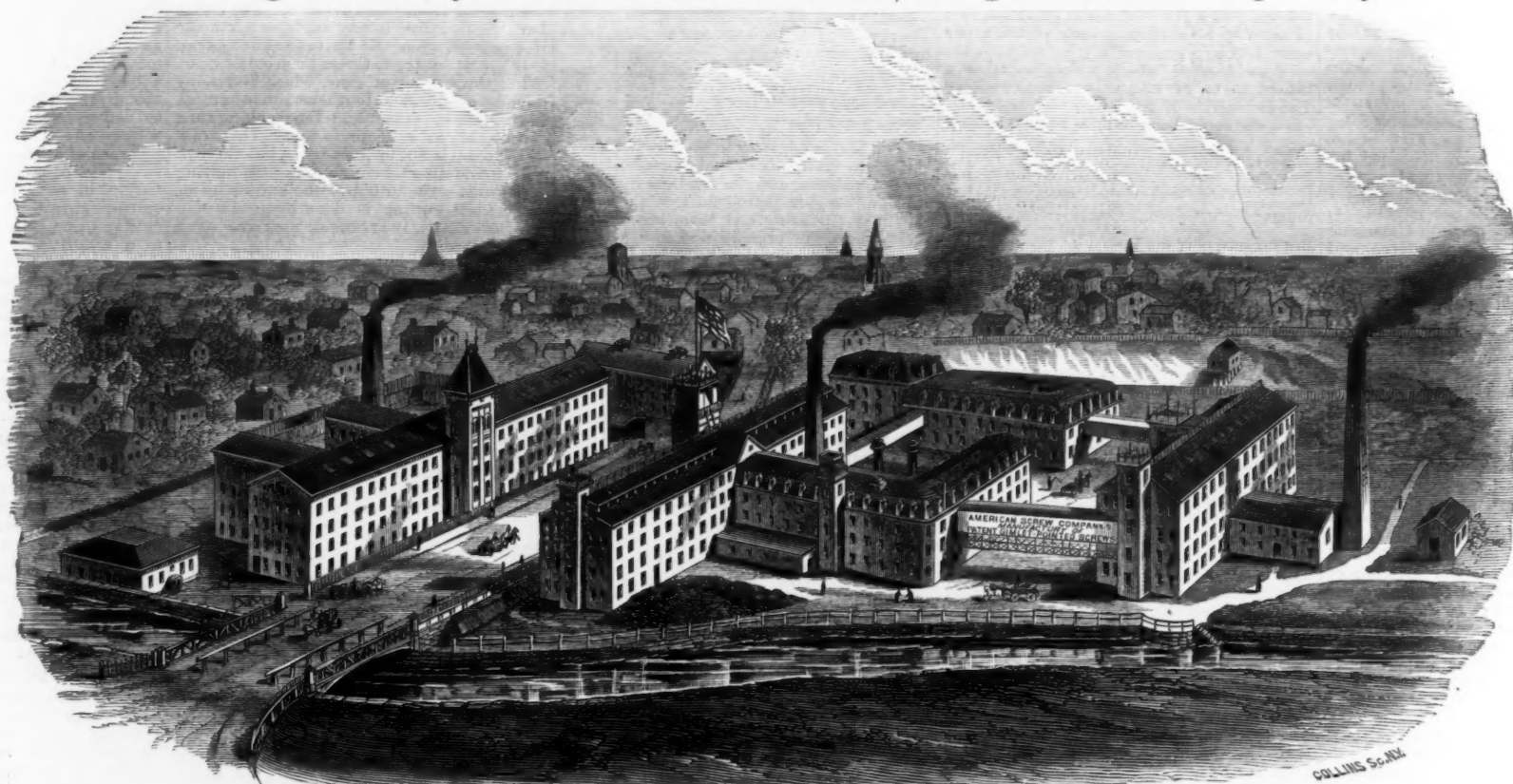
On the opposite page will be found illustrations of the various Works of the company.





**NEW ENGLAND MILL.**

Containing Machinery for the Production of 22,500 gross of Screws per day.



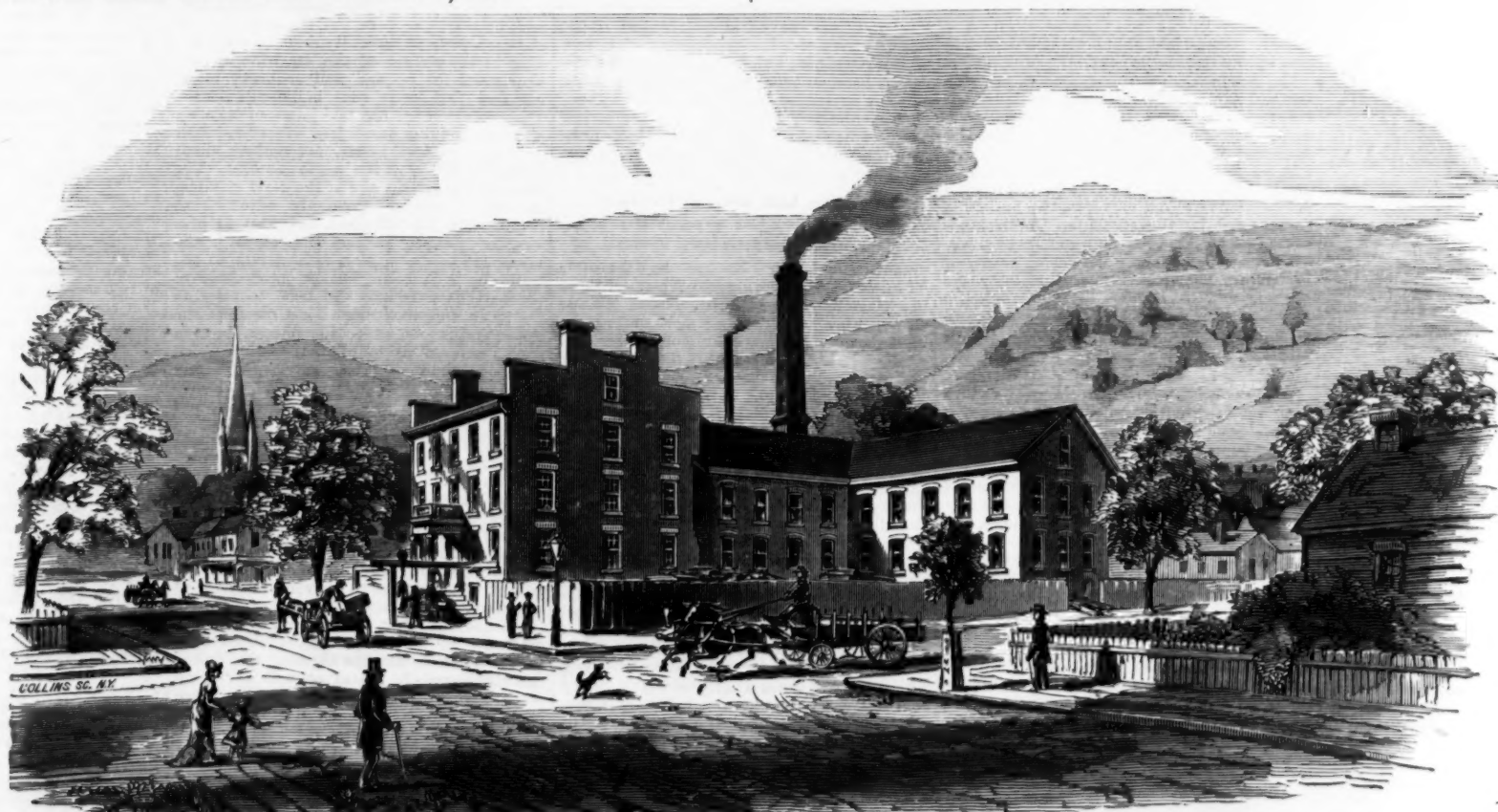
**BAY STATE AND EAGLE MILLS.**

**BAY STATE MILL,**

For the Production of Stove Bolts, Tire Bolts, Rivets,  
Lock and Machine Screws, &c.

**EAGLE MILLS.**

Capacity 22,500 gross Wood Screws per day.



**WORKS AT DUNDAS, ONTARIO, CANADA.**

Capacity, 4000 gross Screws per day.



## THE PARIS EXPOSITION.

(From our Special Correspondents.)

PARIS, August 30, 1878.  
SWITZERLAND.

This little republic makes a large and very fine display in the machine gallery. It has even been obliged to extend its machinery into the main building to make room for all that has been sent. We have here an example of what a large degree of liberty and a widespread common school education will do toward making an energetic and practical people.

The largest and one of the most interesting of the exhibits in the Swiss section is made by Sulzer Brothers, of Winterthur. The following are some of their principal machines: 1. A compound horizontal engine with rope driving gear, and fitted with their patent valve gear. This engine runs the principal line of shafting in the Swiss machine gallery. The cylinders are 300 mm. (11.81 in.) and 600 mm. (23.72 in.) in diameter respectively, with 900 mm. (35.43 in.) stroke. The normal indicated horsepower is 120 at 70 revolutions per minute, with a pressure of six atmospheres, the cut-off in the small cylinder being made at 0.3 stroke. The two cylinders are placed one behind the other, and only one piston rod is used for both. The piston rod is prolonged behind and works the air and feed pumps, both of which are vertical. The air pump is double-acting. The steam is admitted from the boiler to the bottom of the steam jacket of the small cylinder, thence through the valves into the small cylinder; it does its work here, passes out through the exhaust pipe into the steam jacket of the low pressure cylinder, and finally into this cylinder. The valve gear consists of a long shaft, parallel to the axis of the cylinder, which revolves at the same speed as the crank shaft and drives the governor and the valve eccentrics. Four eccentrics and eight valves are used. The exhaust valves are driven from links attached to a point in the eccentric rod. 2. A tubular smoke-consuming boiler. Heating surface, 50 square meters; effective pressure, six atmospheres. It is claimed that with one kilogram of good Saarbrücken coal 9.5 kilograms of dry steam can be produced. 3. Five steam pumps, the smaller ones being designed for feed pumps. 4. Three centrifugal pumps, furnishing from 600 to 10,000 liters (from about 158 to 2641 gallons) per minute. 5. Nine blowing engines. 6. A gas machine for making oil gas for 100 burners; and stoves, heating apparatus, rock drills and machinery of all kinds which lack of space forbids our discussing in detail.

Messrs. Weibel, Briquet & Co., of Geneva, have an improved boiler for the extraction of salt from salt water. They have attempted to utilize the heat of the steam produced by the evaporation of the water in a first boiler by conducting it against the shell of another boiler containing salt water at a lower temperature than the first. The steam produced in the second boiler is brought into contact with the shell of a third boiler cooler than the second, and so on. This principle has long been applied to the apparatus employed in distilleries and sugar refineries. For solving the problem he had undertaken, Mr. Picard, the inventor of this apparatus, was obliged to observe the two following conditions: In the first place the apparatus must be hermetically closed, in order to prevent the escape of the steam obtained from the salt water; and secondly, the apparatus though closed must be so constructed as to allow the continual and regular extraction of the solid salt precipitated during the evaporation. The apparatus consists of a closed cylindrical boiler containing a hollow cylinder called the condenser. This latter contains only steam, and is entirely immersed in the saline solution. At the bottom of the boiler is a vertical tube provided with two hand valves with a certain amount of space between them. The upper valve is usually open, while the lower one is generally closed. When steam is introduced into the condenser at a higher temperature than that of the solution, the condenser transmits this heat to the surrounding liquid which is vaporized, while the steam is condensed. The condensed steam flows out by one tube, and the vapor from the solution escapes into another tube. The salt produced by the evaporation forms a crystalline precipitate, part of which falls to the bottom of the boiler, while the remainder adheres to the shell of the condenser and is detached by scrapers which slowly revolve at a short distance from the surface of the shell. After it has been detached the salt falls to the bottom of the boiler and is there carried by the rotation of the water to the tube mentioned above. As the upper valve is open it falls into the space between the two valves, and can be extracted by closing the upper and opening the lower valve. The admission of air into this tube is prevented by a trap filled with salt water.

The Oerlikon Werkzeug-und Maschinen-Fabrik, near Zurich, has sent some wood-working machinery. We notice a universal machine for cabinet work, combining a circular saw, planer and band saw, and a machine for making wooden cogs. Besides these they have a molding machine for drawing out the pattern from the sand mold. Bosshard & Co., of Naefels, have on exhibition an oval turning lathe for oval picture frames or cornices. It turns ovals whose major axis is 39 inches long, with a difference between the axis of 5 3/4 inches. Wegmann & Co., of Baden, exhibit all kinds of silk machinery. Fred. & Theod. Bell of Kriens, near Lucerne, have a mortiser for bevel and gear wheels, a Girard turbine and some paper and paste-board machinery. The Swiss Locomotive and Tramway Manufacturing Co., of Winterthur, exhibit a dummy, a tramway and two small locomotives weighing about 9 tons. They have also a horizontal engine with variable cut-off, a portable engine with feed heater, three rotary blowers and some feed pumps.

Escher Wyss & Co., of Zurich, have an exhibit of engines, boilers and hydraulic motors. They have a compound engine with the cylinders arranged in a straight line, with one piston rod for both instead of side

by side, as is usually the case. The high-pressure cylinder is steam jacketed. The distribution of the steam is effected by means of four valves, the valve gear of the high-pressure cylinder being directly connected with the governor. It is claimed that the steam can be cut off at from 0 to 95 one-hundredths of the stroke. The hydraulic motors exhibited by this company are small overshot wheels, ranging in power from 0.2 to 20 horse-power under heads of 10 to 200 meters of water. They have also a vertical compound marine engine of 50 to 60 horse-power, with cylinders 200 and 380 mm. in diameter respectively. The small cylinder is steam-jacketed. Socin & Wick, of Bale, have an exhibit of steam engines and turbines. They have one 40 horse power engine with equilibrium valves, and a feed heater in which they utilize the exhaust steam from the engine. The latter consists of a receiver for the steam, a number of wrought-iron tubes for the circulation of the feed water, two cast-iron disks and cast-iron bends joining the tubes two-by-two. An exhibit of pumps and air compressors is made by A. Schmid, of Zurich. These pumps may also be used as hydraulic motors. They are provided with one or two oscillating cylinders.

The locomotive works of Aarau exhibit one of their locomotives for use on steep grades. The essential feature of this locomotive is that it is provided with a toothed wheel working in a rack placed between the rails. The crank shaft is furnished with two pinions, one of which transmits motion to the toothed wheel and the other to the four ordinary driving wheels of the locomotive. The motions are entirely distinct. When the toothed wheel is in operation the driving wheels are thrown out of connection, and when the wheels are driven the toothed wheel is motionless. The pinions are always in gear, but when not in use they are loose on the crank shaft. A lever in the engine room enables the engineer to make the connection with either the toothed wheel or the driving wheels without stopping the engine. This locomotive is designed to draw a 90-ton train on a grade of one in 50 at the rate of 20 to 25 kilometers (about 15 miles) per hour, and on a grade of 1.3 in 25, with the rack and toothed wheel arrangement at a rate of 10 to 12 kilometers (about 7 miles). The dimensions of this locomotive are as follows, the meter being a little over 39 inches:

Diameter of cylinders.....mm.	300
Travel of piston....."	500
Diameter of boiler....."	1030
Length of boiler tubes....."	2300
Diameter....."	45
Number....."	53
Heating surface of fire-box.....sq. m.	3.8
" " tubes....."	44.5
Total heating surface....."	50.3
Diameter of toothed wheel.....mm.	1050
Diameter of driving wheels....."	500
Weight of the locomotive when empty.....tons.	14.4
Weight of water in boiler....."	1.0
" " in tank....."	1.6
" fuel....."	1.0
Total weight of locomotive when in use....."	18.0

This locomotive was destined for a special purpose. The railway for which it was constructed transports freight chiefly down grade, so that only empty cars and passenger cars have to be hauled up grade. Where heavy traction is required a different style of engine is used. In this the four driving wheels are directly connected, as in the ordinary locomotive. Each axle is provided with two loose wheels, and on the grades where the rack is used two extra rails are laid to receive these wheels. These rails are somewhat higher than the exterior rails, so that when the locomotive reaches the rack the driving wheels are lifted from the track and only serve to transmit motion to the toothed wheel which works in the rack. In this way both motions are entirely independent of each other. The advantage of this system over the former is that the locomotive can pass from the ordinary track to the rack without any stop or change of gear—a fact of great importance, especially at night.

## GREECE.

Greece has, properly speaking, no exhibit of machinery. That portion of the foreign machine gallery which had been set apart for her exhibits has been allotted to Belgium, and it is only after a close search that the visitor spies a few machines off in a corner which he had at first supposed formed part of the Belgian exhibit.

G. Basiladès, of Piree, has a portable vertical boiler with vertical and inclined boiler tubes. The heating surface is 7 square meters (about 73 square feet). The diameter of the boiler is 1.10 meters (3 feet 7 inches), and the height of the boiler is 2.50 meters (8 feet 1 1/2 inches). The Polytechnic School of Athens exhibits a molding machine constructed by the students. A large collection of Greek ores and minerals is exhibited by the French Mining Company of Laurium. They have also a model and maps of their mines. Besides these we notice a few models of vessels and some samples of bituminous coals and cokes. And this is all.

## DENMARK.

Of the 15,625 square miles of territory composing Denmark proper, about two-thirds are under cultivation, and most of the rest are lowlands. Mines are very few, and the mining industries are not much developed. There are a few unimportant coal mines at Bornholm, but with some granite quarries and calcareous beds at Faxø in Zealand, and at Daagbjerg and Mønsted in Jutland, that is about all. Clays are found in considerable quantities, and are employed in the manufacture of bricks and cements. A good quality of peat is found in abundance throughout the country. In some of the Danish possessions there are rich mines. The coal mines of the Færø islands are not yet fully developed, but they are full of promise for the future. Iceland has some rich sulphur mines, and in Greenland cryolite is found to a considerable extent. This mineral has been successfully employed in the manufacture of soda since Mr. J. Thomson showed that it can be decomposed with lime. In the catalogue published by the Danish Commission (Copenhagen, 1875, 12 mo.), it is stated that the first works ever established for the extraction of soda from cryolite were founded in 1856 at Haderslev,

and transported to Copenhagen in 1858. Over 10,000,000 pounds of cryolite are annually exported from Ivikout in the Southern part of Greenland. The chemical industries have been greatly developed since 1822, when the first sulphuric acid works were established.

The principal agricultural machinery exhibited in the Danish section of the machine gallery are a machine for spreading artificial liquid manure, manufactured by Caroc & Leth, of Aarhus; a few plows and harrows; a seed sower constructed by A. C. Rasmussen & Co., of Stubbekjøbing, and a horse rake made by L. S. Vistoft, whose factory is at Vibæk, near Viborg. Erichsen & Maardt, of Copenhagen exhibit a model and drawings of a patent gas and coke furnace. The principle of this invention is the combination of a coke furnace with gas retorts. The gases produced by the combustion of the coal in the coke furnace are first employed in heating the retorts and distilling their contents. They are then conducted into a chamber where they mingle with the gas from the retorts, and the combustion of the combined gases, which costs nothing, is directly applied to the production of steam to the roasting of ores or to any other industrial purpose. It is stated that the metallurgical coke and ordinary coke obtained by this process cover the expense of the coal used in the furnace and retorts. The claims made for this apparatus are:

1. Complete utilization of all the calorific of the coal, first as gas and then as coke.
2. Complete suppression of smoke.
3. Production of a valuable metallurgical coke.
4. Production of an excellent coke for domestic purposes.
5. Great regularity in the heat.

Specimens of the coke obtained are on exhibition. V. J. Berg has on exhibition some scales and a recording dynamometer, and S. Frich, of Aarhus, has a small vertical 2 horse-power engine. Here is a large lump of bituminous coal from Sudero. The following analysis of the two varieties found in this locality are taken from an accompanying statement. They were made with specimens free from ash and water:

Carbon.....	73.5	72.0
Hydrogen.....	4.2	4.8
Oxygen and nitrogen.....	21.8	23.2
Total.....	100.0	100.0

Wm. Major, engineer in the Swedish navy, claims to have discovered a means of preventing priming and incrustations in boilers. He simply injects petroleum into the boiler, thus "precipitating and throwing down to the bottom the organic and inorganic impurities, which may then be blown off in the usual manner." Mr. Major claims that one pint of pure unrefined petroleum is sufficient for every 100 cubic feet of fresh water evaporated in a land boiler working with a pressure of 65 pounds per square inch, and states that he has taken off incrustations of 12 years' standing without a material difference in the quantity of petroleum used. In order to furnish steam boilers with the necessary petroleum at any moment, with all possible safety, he has invented a simple apparatus. This consists of a closed iron tank which is filled with petroleum by means of a pipe leading to the bottom of the tank and closed by a cock, valve or tight-fitting screwed cover. Another pipe ascends from the bottom of the tank, passes through the cover of the same, and is connected with a regulating valve apparatus which can be fixed either directly to the top of the tank or connected with the feed pump, donkey engine pump or injector. In the apparatus exhibited the valve of this regulating arrangement is opened to the feed pump. Its opening is effected by a stop-cock or valve of suitable construction, whereby the quantity of petroleum used can be regulated. When this valve or cock is opened the petroleum flows into the feed pump, mingling with the feed water, and is thence forced into the boiler.

Mr. Anker Heegaard, of Fredericksvaerk, exhibits some stoves provided with his patent heating smoke flue. This consists of a series of funnel-shaped castings, which retard the passage of the gases of combustion to the chimney and offer a greater amount of heating surface than the ordinary cylindrical flue. Mr. Heegaard has also a mowing machine of simple construction, and a collection of hollow-ware and patent sad irons. Let us give a simple enumeration of a few of the remaining exhibits. We notice some patent hempen belts, a lathe and a collection of tools belonging to Nielsen and Winther, of Copenhagen, a model of a feathering paddle wheel made by Dahlström & Lohmann, also of Copenhagen, and some patent ventilators exhibited by C. J. Rosen.

## American Agricultural Exhibits.

Continuing this subject we notice the

## CHAMPION REAPERS AND MOWERS

manufactured for Europe by Warden, Mitchell & Co., of Springfield, Ohio. Of these machines five are exhibited. One combined reaper and mower, one single reaper, one light mower, one new champion mower and another light mower highly finished. This last is the machine that was on exhibition at Philadelphia in 1876. It attracts here as it did there extraordinary attention for its fine workmanship and material. So much notoriety has been already given to this exhibit at Philadelphia, and to this machine in particular, that it is only necessary to state that the metal parts are polished and nicked, and the wood is solid rosewood inlaid with white holly. As working machines these mowers have established their reputation for strength, durability, convenience of handling, power and peculiar construction, enabling them to do good work under the most difficult circumstances of heavy, wet, tangled down grass. This was strikingly proved at the great Centennial field trials of 1876, where the wet grass was rolled with a heavy field roller, and this mower, following immediately after, cut a clean, smooth swath, without stoppage or difficulty. The combined reaper and mower, which is an automatic self-raking reaper, is light, strong and convenient for handling, readily adjusted to cut high or low, and automatically to rake and deliver one or two bundles at each revolution. The platform is carried upon an adjustable caster wheel, preventing all trouble in turning, and by means of a pinion and

spring ratchet the platform can be raised or lowered as may be required. The single reaper is made to cut 5 feet and 6 feet, has but one driving wheel, has a peculiar telescopic geared connection for communicating motion from the driving wheel to the rakes, which automatically adapts itself to the raising and lowering of the platform when different heights of cut are required. The arrangement for tilting the knives, indispensable in cutting down a lodged grain, are similar to the combined machine. The new champion mower is distinguished from the other machines by being a front cut—that is, having the cutting apparatus in front of the driving wheels. In this new mower is embodied a new mechanical movement for driving the knife. Its operation is nearly noiseless. The knife will run in whatever position it is placed. The cutter-bar may be raised to an upright position for the purpose of removing any lodgment to free the guards or to pass a tree. It can be instantly thrown in or out of gear without stopping. There is no gearing in the drive wheels. There are practically but two pieces between the axle and the knife, one being a small, level cog-wheel secured to the axle, and the other a similar wheel, or rather disk, made to gear into the first. This disk does not rotate, but is hung upon a gimbal joint, and when the machine is at work it performs a succession of serpentine movements, which is directly communicated to the knife by an arm attached to this vibrating disk. There is only one rotating bearing besides the axle, which belongs to a small fly-wheel, which receives the thrust from the knife and relieves the gearing from jarring; hence there are no boxes or bearings to wear out or cause friction. Thus almost the entire power exerted by the horses is applied directly to driving the knife. The cutter bar is raised and lowered by two levers, one by the foot, the other by the hand. The foot lever is for the purpose of raising the heel of the knife to pass over obstructions, and also as a special means, in connection with a spring catch, of holding the cutter bar at its proper elevation from the ground when raised vertically for moving from place to place. The cutter bar may be raised to any angle, or vertically if required, while the knives are in motion; it is not necessary to throw them out of gear. When thrown out of gear, which is readily done by means of a foot lever, there are no cog wheels in contact and the machine runs as smoothly as a common cart. The draft of the team is not upon the pole, but through a draft rod directly connected to the cutting apparatus. The tilting of the knives up or down while cutting is done by means of a lever conveniently arranged near the hand of the operator.

THE JOHNSTON HARVESTER COMPANY, Brockport, N. Y., make a very large exhibit of their machines. This includes their Nos. 1 to 4 machines, a single mower, wrought-iron harvester, combined one and two horse reapers and a harvester with twine binder. The binder is a very meritorious improvement; the sheaf is bound with string, tied in a clove knot, the two ends kept side by side, turned round in a loop or eye, and both passed through. The movement by which a hook is made to turn the string, pull it through the loop, and afterward release it, is peculiar and remarkable. There are in the combined machines some very important special features. In it are combined all the excellences of the wrought-iron harvester and the mower. Among these may be mentioned the following: The wheels are 34 inches high, with a broad tread, and made with wrought iron spokes, each five-eighths of an inch in diameter, with a thread cut on each end, and the hub and rim cast on. They are set bracing at the hub, stiffening the wheel so that no side strain can affect it; and the hub is wide, giving a long bearing on the axle, causing the machine to run steadily and noiselessly. The number of spokes also braces the rim in more places than ordinary cast wheels, making them much less liable to be broken. Either wheel drives independent of the other, and both are out of gear in backing. The high wheel is found to be indispensable in parts of the country where the harvest is wet, enabling the machine to run successfully where many low-wheeled machines bury down. The iron frame is a single bar of wrought iron with one joint only. The gearing is well up from the ground, runs almost noiselessly, and, by a simple operation, the speed can be changed without difficulty and without adding to the weight of the machine, giving slow speed for reaping and ordinary mowing, and fast for mowing in difficult places. The extension bar has ball joints to take up all wear, making much less vibration than ordinary straight joints, and adding much to the durability of the whole machine. The pitman connections are of the most reliable, durable character, perfectly adjusted to compensate for all wear, and also to prevent any binding in the connections. The lower end of the pitman is attached to the knife by a ball and socket joint, held in place by a forked nut and bolt, to take up the wear, thus avoiding all lost motion; the upper end is pivoted to the pitman box in such a manner as to allow the box to work without binding on the crank pin in any position of the cutting apparatus. The raking apparatus consists of five arms and blades, with extension slats, having a capacity for reeling the tallest grain without scattering. The rake stand is located at a sufficient height from the cut of the knife, and set far enough ahead to enable the rake to reel the grain at the inner end of the cutting apparatus, delivering it straight on the platform, and putting it off in straight, compact gables. The rakes are under full control of the driver to deliver the gavel at any time. By means of the new gear trip the rakes can be set to deliver gavels automatically at the distance of 8, 12, 16 or 20 feet. When set in this manner the driver can still carry the sheaf at will over thin places and away from the corners. These machines are in common use throughout America and have large sales in Europe. They are also used in Australia and New Zealand.

MESSES. ADRIANCE, PLATT & CO., Poughkeepsie, N. Y., exhibit four of their agricultural machines, comprising one new model "D" A. P. & Co. "Buckeye" mower and one with manual delivery; one A. P. & Co. "Buckeye" combined mower and self-

raking reaper; one "Adriance" self-raking single reaper. The Buckeye has been made for nineteen years and has achieved a very enviable reputation. As noted elsewhere, many of the mowers manufactured in Europe are modeled after it. At the great trial at Auburn, N. Y., in 1866, the official report said: "The record of the Buckeye is interesting, in view of the fact that it was the pioneer in the path of the great improvements which have popularized mowing machines and made them an absolute necessity to every farmer. \* \* For several years past every new mowing contrivance has gravitated more and more toward the Buckeye principle until all the machines are grouped around this central type, only differing from each other by the introduction of different mechanical equivalents for accomplishing the same purpose." In the Buckeye method of gearing only four cog-wheels are used, which are all carried high up from the ground, while the driving-wheels are like the wheels of a cart, entirely free from all cog-wheels. In the Buckeye machine, the first or slow motion is obtained by bevel gears and the quick motion by spur or straight-cut gears. The gears are always in the same level position, unaffected by any movements of the cutting apparatus, and the motion given to the knives is of an unvarying regularity. The whole weight of the gearing, frame and driver is carried on the driving wheels and none of it is wasted. The cutter-bar, being attached to the frame by a double-jointed coupling, has only its own weight to sustain, and this much is needed to keep it down to its work. The different parts of the gearing are very accessible, and any separate piece can be replaced at small expense or trouble. The gear is all placed at the corner of the machine which is furthest removed from the cutting apparatus, balancing the machine and obviating side draft. The Buckeye self-raking reaper uses the Dorsey principle of sweep rake. The angle of the cam track is such as to cause the arms to bring the grain on the platform in the best shape, whether it be tall or short; and the adjustable sheet-iron elevator at rear of platform causes the grain to be raked off in the most even gables on all kinds of ground. The peculiar method of operating the rakes makes them automatic, but entirely under the control of the driver. When the rakes are adjusted to deliver the grain at a uniform distance, the driver can, at any moment, by a slight pressure of his foot, prevent the rake from sweeping the platform if he does not wish the grain delivered at that point. The cutting apparatus is made expressly for cutting grain. In changing from a mower to a reaper, the mower bar is removed by disconnecting two bolts, which same bolts attach the reaper bar, and the time occupied in making the change is much less than on a machine where the mower bar has to be attached to the reaper platform.

## A. B. FARQUHAR,

York, Pa., exhibits 4 of Reese's patent plows and Farquhar's separator horse rake. He also shows a patent carriage jack.

## BICKFORD &amp; HUFFMAN,

Macedon, N. Y., exhibit a seed drill of their manufacture.

## THE BAY STATE RAKE CO.,

Winchendon, Mass., exhibit their new rake built for the season of 1878. This is a self-acting rake, the discharge being by the action of the wheels under a light pressure of the foot. The teeth are independent of each other, and are so made as to surmount any obstacle a foot and a half high without raising the teeth.

## J. W. STODDARD &amp; CO.,

Dayton, Ohio, exhibit through their French agent their Tiger Horse Hay Rake. This rake is light, strong and durable. In its facility for discharging the hay it is claimed to be without a rival. It requires but little skill or strength to operate it. A boy or girl who can drive a horse can work the rake as well as the strongest man. The teeth are of cast steel, and guaranteed.

## CONDIT, HANSON &amp; VAN WINKLE,

Newark, N. J., have several of their dynamo-electric machines at work in the American, French and Spanish sections of the Exposition, showing the process of electro-plating, electro-typing, &c. This machine differs entirely in its construction from the Wilde, Gramme and other machines, the current produced depending entirely upon the principle of mutual accumulation. From its peculiarity of construction the current is automatic, adjusting itself to the amount of surface in the solution, any increase of work reducing the resistance in the solution and increasing the current of electricity. The machine, consequently, consumes power only in proportion to the work done. The machines are solidly constructed, and the armatures, unlike those of the Siemens' machine, are not liable to injury from strains produced by the unequal expansion of two metals, as they are entirely of iron. The commutator is very simple and solid, and is subjected to very little wear. It is placed outside of the bearings where it is easily accessible for cleaning or adjustment. The use of lozenge-shaped armature plates saves much strain upon the machine from a sudden cutting of the lines of force. The machine by reason of its great power may be run at speeds as low as 450 to 800 revolutions per minute. The company are building a machine that will fuse a rod of iron half an inch in diameter; it is intended for larger electrotyping establishments, refining metals from the ore, &c. The machines for the exhibition of the electric light, now in progress, were unfortunately not ready in season for the Exhibition, and the company are not able to show the progress which they have made in this field, where the economy of power and simplicity of construction of these machines will, we think, give them a very great advantage. Some 600 of these machines have been sold since they were first exhibited at the Centennial.

## VOLNEY W. MASON &amp; CO.,

Providence, R. I., exhibit their patent friction clutch and pulleys, and their patent hoisting machine for elevators, &c. The latter is a very compact machine, and seems well studied in its details, simple in its construction, accessible in its parts, readily stopped, started or reversed, and is claimed to



**B. KREISCHER & SONS,**  
**FIRE BRICK**  
AND  
**CLAY RETORT WORKS.**  
Established 1845.  
Office, foot of Houston Street, East River,  
NEW YORK.

The largest stock of Fire Brick of all shapes and sizes on hand and made to order at short notice.  
Cupola Brick, for McKenzie Patent, and others. Fire Mortar, Ground Brick, Clay and Sand. Superior Knoch for Rolling Mills and foundries. Stone Ware and other Fire Clay and Sand, from my own mines at New Jersey and Staten Island, by the cargo or otherwise.

**NEWTON & CO.,**  
Successor to  
**PALMER, NEWTON & CO.,**  
ALBANY, N. Y., Manufacturers of  
**FIRE BRICK**  
**Stove Linings,**  
**Range and Heater Linings**  
Cylinder Brick, &c., &c.

**M. D. Valentine & Bro**  
Manufacturers of  
**FIRE BRICK**  
**And Furnace Blocks**  
**DRAIN PIPE & LAND TILE.**  
Woodbridge, - - - N. J.

**A. HALL & SONS,** Perth Amboy, N. J.  
ESTABLISHED 1864.  
**HALL & SONS,** Buffalo, N. Y.  
ESTABLISHED 1866.  
**FIRE BRICK**  
of reliable quality for all purposes, manufactured on the best New Jersey Fire Clays. Also, Architecture Terra Cotta, Fire Clay, Fire Sand, Kaolin, Ground Fire Brick and Diamond Building Brick.

**Brooklyn Clay Retort**  
AND  
**FIRE BRICK WORKS.**  
Manufacturers of Clay Retorts, Fire Bricks, Ga House and other Tile, Cupola Brick, &c. Dealers in and Miners of Fire Clay and Fire Sand. Clay bank at Burt's Creek, New Jersey. Manufacture: Van Dyke, Elizabeth, Richards and Partition Sts., Brooklyn, N. Y. Office No. 30 Van Dyke St.

**Watson Fire Brick Manufactory**  
ESTABLISHED 1856.  
**JOHN R. WATSON,** Perth Amboy, New Jersey.  
Manufacturer of  
**FIRE BRICK,**  
For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Solder and Grate Setting, Glass Works, &c.  
FIRE CLAYS, FIRE SAND, AND KAOLIN FOR SALE

**HENRY MAURER,**  
Proprietor of the  
**Excelsior Fire Brick & Clay**  
**Retort Works,**  
Manufacturer of FIRE BRICK, HOLLOW BRICK AND CLAY RETORTS.  
WORKS (PERTH AMBOY, NEW JERSEY)  
Office & Depot: 418 to 422 East 23d St., N. Y.

**TROY FIRE BRICK WORKS**  
Troy, N. Y.,  
**JAMES OSTRANDER & SON,**  
ESTABLISHED 1848.  
Manufacturers of  
**FIRE BRICK,**  
Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and Dealers in Woodbridge Fire Clay and Sand, and Staten Island Kaolin.

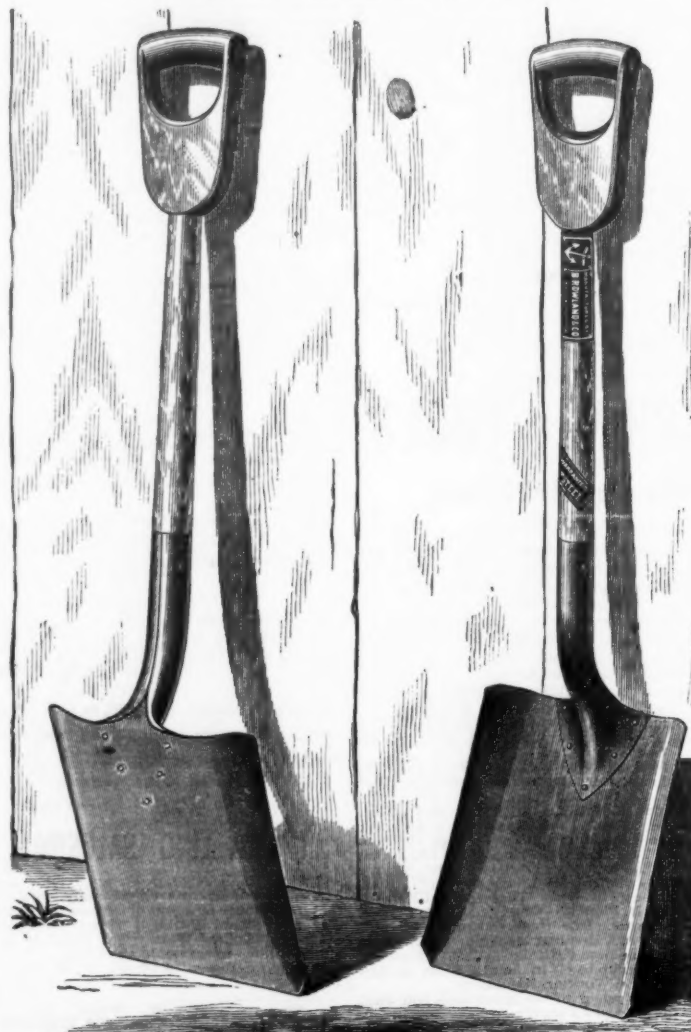
Established 1864.  
**GARDNER BROTHERS,**  
MANUFACTURERS OF  
**STANDARD SAVAGE**  
**Fire Brick, Tile & Furnace Blocks,**  
OF ALL SHAPES AND SIZES.  
Clay Gas Retorts and Retort Settings,  
AND  
Miners and Shippers of Fire Clay.  
OFFICE: 25 Penn Ave., Pittsburgh, Pa.  
WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

**BORGNER & O'BRIEN,**  
Manufacturers of  
**Fire Bricks,**  
**Clay Gas Retorts,**  
**Retort Settings,**  
**Tiles, Blocks, &c., &c.**  
23d St., below Vine,  
PHILADELPHIA.  
Eighteen years' practical experience.  
CYRUS BORGNER. WM. J. O'BRIEN

**PATENTS**  
Procured for Inventions, Trade Marks  
Copyrights, &c.  
Advice free. Call or send for book of instructions.  
Address  
JOHN A. WIEDERSHEIM & CO.,  
110 South 4th St., second floor, front room,  
Philadelphia.

95 Chambers St. Read St., 77.  
**E. S. DODGE**  
**PRINTING**  
COMPANY.  
ED. HUTCHINGS, Sup't. NEW YORK.

**B. ROWLAND & CO.,**  
**PHILADELPHIA.**



**B. Rowland & Co.'s Patent Riveted Shovel.**  
**CAST STEEL.**

We would particularly call the attention of the trade to the Patent B. Rowland & Co.'s Anchor Brand Shovel, as now manufactured by us, possessing as it does improvements in construction which render it the most perfect STRAP Shovel made. In it the old style of back strap is entirely dispensed with, and a front strap substituted, riveted and clamped firmly to the blade, clasping the handle in the manner of a ferrule, thus obviating all danger of tearing off strap and making a more beautiful finish front and back. These improvements add to the appearance of the shovel, enhancing its durability at least one-third, and warrant the assertion that all the Shovels we manufacture from this patent will prove the most desirable ever offered the consumer.

The above advantages are also especially noticeable in our Spades and Scoops under the same patent.

**B. Rowland & Co.**  
**CAST STEEL.**

All goods of this brand (which is copyrighted) are warranted in every respect, and we will guarantee that the following named PATENT RIVETED Shovels and Spades will be made from the gauge of Cast Steel specified:

D Handle Square Point Shovel	13 gauge
D " Round " " "	14 " "
D " Long Handle Round Point Shovel	15 " "
D Handle Spades	11 " "
D " Western Coal Shovel	15 " "
D " Anthracite Coal Shovel	14 " "

Gauged by Stubbs' Gauge.

**B. ROWLAND & CO.,**  
CITY OFFICE,  
27 North Fifth Street, Philadelphia, U. S. A.  
Works at Frankford, Phila., U. S. A.

NEW YORK WAREHOUSE, 100 Chambers St.  
**MACOMBER, BIGELOW & DOWSE,**  
Nos. 156 and 164 Oliver St., Boston, Mass.,  
NEW ENGLAND AGENTS.

be safe in use. The friction pulley is operated by a lever connected to the groove in a thimble, and by a longitudinal movement of the thimble segments are operated and thrown in or out of connection with the inner surface of the pulley, thereby communicating motion to the shaft.

J. B. HOYT & CO.,  
28 and 30 Spruce street, N. Y., make a very fine display of oak-tanned leather belting. A very wide belt made for an English manufactory is especially worthy of inspection.

BOYD & CHASE,  
107th street and First avenue, New York, exhibit samples of Washita and Arkansas oil stones.

HENRY M'SHANE & CO.,  
Baltimore, Md., proprietors of the McShane Bell Foundry, have a large bell in the Main Building, mounted. Occasionally it is struck or rung, and its deep, rich tone is much admired. It did full duty on the Fourth of July, and was a reminder to the Americans here of that "clangor of the bells" that usually greets him at home on this day.

THE DOVER STAMPING COMPANY,  
Boston, Mass., make a novel display of their Dover Egg Beater in Agricultural Hall. It consists of a pyramid of something like a hundred beaters arranged in rows on the outer surface of a cone, and all operated by a single crank. The effect when the whole hundred are wheeling in and out at the same time is striking.

HERRING, FARRELL & SHERMAN,  
251 Broadway, New York, exhibit two of their safes in Machinery Hall, and one in the office of the Commission, where it is in use. These safes are well finished, and certainly display as good workmanship as any in the Exhibition. The battle of the safes which raged so fiercely after the trial at the Paris Exposition in 1867 has been reopened by circulars and before the jury, and an intensely and bitter war may be anticipated.

R. H. ALLEN & CO.,  
manufacturers of warehouse trucks, 191 Water street, New York, have made one of the most practical exhibits in the American section. The trucks sent to Paris by this firm were not for show alone, but for use, and have been constantly in use by the United States Commission, who are loud in praise of their efficiency. The superintendent of the Machinery Department is especially warm in his commendations.

THE AMERICAN FENCE MFG. CO.,  
86 Mangin street, New York, exhibit in the space between the American and Swedish annexes samples of their patent fence of wood and iron combined.

**Honors to American Exhibitors.**  
PARIS, Sept. 6.—The following is an additional list of exhibitors to whom gold medals have been awarded in the United States section at the Exposition, but, like the previous lists, is unofficial and incomplete: The American Watch Company, of Waltham, Mass., watches and watch movements; the Willimantic Linen Company, of Hartford, Conn., spool cotton (the latter the grand prize); E. Remington & Sons, of Ilion, N. Y., fire-arms; Edward Simons & Brothers, of New York, trunks and bags; Barnum, Richardson & Co., of Lime Rock, Conn., car wheels, &c.; Collins & Co., of Hartford, Conn., axes and edge tools; Hines & Ginna, of New York, oil-tank; Hoopes & Townsend, of Philadelphia, Penn., bolts, nuts and rivets; Lalanc & Grosjean Mfg. Co., of New York, sheet metal ware; the Lobdell Car-wheel Co., of Wilmington, Del., car-wheels and rolls; D. H. Wilson & Co., of New York, woodenware, &c.; F. Boess & Bro., of New York, furs; Striedinger & Doerflinger, of Brooklyn, N. Y., model of blasting apparatus; Hancock Inspirator Co., of Boston, Mass., inspirator; J. Van D. Reed, of New York, circular loom; Bliss & Williams, of Brooklyn, N. Y., machinery for sheet-metal working; Browne & Sharpe Mfg. Co., of Providence, R. I., machine tools; Henry B. Goodyear, of New York; Brewster & Co., of New York, carriages; Hoopes Bros. & Darlington, of West Chester, Penn., wheels, spokes, &c.; Westinghouse Air-break Co., of Pittsburgh, Penn., atmospheric brake; American Society of Civil Engineers, of New York, plans and models (the latter a diploma of honor); Harry Goodyear, of New York; Pratt, Whitney & Co., of Hartford, Conn.; Providence Tool Co., of Providence, R. I., fire-arms; United States Department of Agriculture (the latter diploma of honor); John Bidwell, of Chico, Cal.; Glen Cove Starch Mfg. Co., of Glen Cove, N. Y., starch; Woodward & Dwight, of St. Louis, Mo.; Indianapolis Board of Trade, of Indianapolis, Ind., produce; the Oregon State Commission; E. J. Larrabee & Co., of Albany, N. Y., crackers and biscuits; Libby, McNeal & Libby, of Chicago, Ill., canned meats; Louis McMurray & Co., of Baltimore, Md., canned provisions; Richardson & Robbins, of Dover, Del., canned provisions; Wilson Packing Co., of Chicago, Ill., canned provisions; Burnham & Morrill, of Portland, Me., canned provisions; E. Anheuser & Co.'s Brewing Association, of St. Louis, Mo., beer; Philip Best Brewing Co., of Milwaukee, Wis., lager beer; Bergner & Engel, of Philadelphia, Pa., lager beer (the latter grand prize); H. G. Shufeldt, of Chicago, Ill., Warder, Mitchell & Co., of Springfield, Ohio, mowers and reapers.

The following is an additional list of awards to American exhibitors. This, like the preceding list, is unofficial, having been obtained in advance of publication.  
Class No. 16.—Silver Medal—To H. F. Krause, New York, maps.  
Class No. 26.—Silver Medal—To Seth Thomas Clock Company, New York, clocks. Bronze Medal—to Ansonia Clock Company, New York, clocks; Hagstog W. Vanderwoert (collaborer). Honorable mention—To F. Kroeber, New York.  
Class No. 27.—Silver Medal—To Rathbone, Sard & Co., Albany, N. Y., stoves; The Open Stove Ventilating Company, New York, stoves; Charles F. Harris, Philadelphia, lock elbow; Adams & Westlake, Chicago; L. W. Leeds & Co., New York, plans. Honorable mention—To T. W. Bracher, New York, ventilators; Fletcher Manufacturing Company, New York, shoe laces; Ella Haller, Philadelphia, fruit jar

and lamp; Leibrandt & McDowell, Philadelphia; George Hayes, New York (collaborer), patent skylights.

Class No. 28.—Bronze medal—To Lorenz Brothers, of Toledo, Ohio, perfumery.

Class No. 29.—Bronze Medal—To Lewis Pattberg & Brothers, of New York, fancy frames.

Class No. 30.—Silver Medal—To S. H. Greene & Sons, of River Point, R. I., prints; Providence Steam Mills, of Providence, R. I.; William H. Grosvenor, of Providence, R. I.; Mauregan Mills, of Providence, R. I., cottons; Manville Company, of Providence, R. I., cottons; Slater Cotton Company, of Providence, R. I.; Appleton Company, of Lowell, Mass., sheetings. Bronze Medal—To Samuel Sempie & Sons, of Mount Holly, N. J., spool cotton; David Trainer & Sons, of Linwood, Penn., cottons; Dunnell Manufacturing Company, of Pawtucket, R. I., prints; John F. Slater, of Jewett City, Conn., cotton goods; Forestdale Manufacturing Company, of Slatersville, R. I., sheetings; Pretty, Grime & Co., of Philadelphia; Allendale Company, of Providence, R. I.

Class No. 34.—Silver Medal—To C. Chaffanjou, of Hudson City, N. J., silks. Bronze Medal—To Monotuck Silk Company, of Florence, Mass., spool silk; J. N. Stearns & Co., of New York, silks.

Class No. 35.—Honorable Mention—To Virginia Brush, of New York, embroidered screen.

Class No. 37.—Bronze Medal—To Fletcher Manufacturing Company, of New York, shoe laces, &c.; Warner Brothers, of New York, corsets; National Suspender Company, of New York, suspenders; F. Sachse & Son, of Philadelphia, Penn., shirts; James L. Libby, of New York, collars and cuffs; Wheeler & Wilson Manufacturing Company, of New York, sewing machines; Waterbury Button Company, of Waterbury, Conn., buttons.

Class No. 38.—Silver Medal—To Gossamer Rubber Clothing Company, of Boston, Mass., water-proof clothing; S. D. Sollers & Co., of Philadelphia, Penn., shoes; John B. Stetson, of Philadelphia, Penn., felt hats. Bronze Medal—To C. Benkert & Co., of Philadelphia, Penn., boots and shoes; Mr. and Mrs. W. J. Demorest, of New York, paper patterns; James L. Libby, of New York, collars and cuffs; G. Rauchfuss, of New York, wigs, toupees, &c. Honorable Mention—John Saller, of St. Louis, Mo.

Class No. 39.—Gold Medal—To Tiffany & Co., of New York, silverware. Bronze Medal—To P. Hartmann, of New York, filagree jewelry. Honorable Mention—To Dean & Bliss, Attleboro', Mass., manufacturing jewelers; Fisher & Co., of North Attleboro', Mass.; H. Muhr's Sons, of Philadelphia, Penn., jewelry, rings; Young & Bennett, of North Attleboro', Mass., jewelry.

Class No. 40.—Silver Medal—To Sharp's Rifle Company, of Bridgeport, Conn., fire-arms; Providence Tool Company, of Providence, R. I., fire-arms; Remington & Sons, of Ilion, N. Y., fire-arms. Bronze Medal—To Colt's Firearms Company, of Hartford, Conn., fire-arms; Tatham & Bros., of New York, shot. Honorable Mention—J. P. Lovell & Sons, of Boston, Mass., air guns and pistols.

Class No. 41.—Honorable Mention—Lyman B. Goff, of Pawtucket, R. I., package carrier.

Class No. 42.—Bronze Medal—To Schlesinger & Co., of New York, mechanical toys; William S. Tower, of Hingham, Mass. Honorable Mention—August Yvard, of New York, scientific toys.

Class No. 43.—Silver Medal—To Douglass Ax Company, of Boston, Mass., axes and edge tools; A. Field & Son, of Taunton, Mass., tacks; Welsh & Lea, of Philadelphia, Penn., carriage hardware; A. Whitney & Sons, of Philadelphia, Penn., car wheels. Bronze Medal—To H. McShane & Co., of Baltimore, Md., bells; Morris, Wheeler & Co., of Philadelphia, Penn., iron, &c.; New England Granite Works, of Hartford, Conn., granite; Pennsylvania File Works, of Philadelphia, Penn., files (McCaffrey & Brother, of Philadelphia, Penn.); Robert Taylor Company, Philadelphia, Penn., crucibles, retorts. Honorable Mention—J. R. Baker, Anti-Friction Metal Company, of New York, anti-friction metal; Barney & Berry, of Springfield, Mass., skates; Boyd & Chase, of New York, oilstones; M. Gould's Sons, of New York, stair-rod; W. T. & J. Mersereau, of Newark, N. J., stair-rod, &c.; E. Mower, of Roxbury, Conn.; Peters Combination Lock Company, of Waterbury, Conn., locks; F. W. Redpath, of Stony Creek, Conn.; John J. Trower, of New York, locks, wrenches, &c.

Class No. 44.—Silver Medal—To Germon Smith, of Winchester, Va.; R. P. Clapp & Co., of Pawtucket, R. I.; J. S. Young & Co., of Hanover, Penn.; Crawford & Co., of Chase's Lake, N. Y. Bronze Medal—To J. G. Hurkamp, of Fredericksburg, Va., sumac; McAtee & Brother, of Front Royal, Va.; C. G. Pringle, of Charlotte, Vt.; Schultz, Southwick & Co., of New York, leather. Honorable mention—W. H. Lippincott, of Philadelphia, Penn., fancy woods.

Class No. 45.—Silver Medal—To Baeder, Adamson & Co., of Philadelphia, Penn., glue, curled hair, emery, &c.; Joseph F. Tobin, of New York, whalebone goods. Bronze Medal—To Oregon State Commission; Cumming & Lockwood, of New York, oil, bones, &c. Honorable Mention—John Shields, of Brookline, Mass., artificial flies.

Class No. 47.—Silver Medal—To H. J. Baker & Brother, of New York, chemicals; Hale & Parshall, of Lyons, N. Y., essential oils; H. G. Hotchkiss, of Lyons, N. Y., essential oils; L. B. Hotchkiss, of Phelps, N. Y., essential oils; National Rubber Company, of Bristol, R. I., rubber goods; W. H. Schieffelin & Co., of New York, soluble coated pills; Valentine & Co., of New York, varnishes; C. T. White & Co., of New York, chemicals; D. M. Young & Co., of Boston, bark extract. Bronze Medal—To Bolen & Byrne, of New York, mineral waters, syphons, &c.; Henry Bower, of Philadelphia, Penn., glycerine; Robert Freeland, of South Boston, soaps; Fritzsche Brothers, of New York, essential oils; Hance Brothers & Co., of Philadelphia, Penn., chemicals; Hathaway, of Boston, Mass., leather dressing; E. F. Houghton & Co., of Philadelphia, Penn., petroleum; McKesson & Robbins, of New York, chemicals; Carniola Chemical Works,



D. M. KEY,  
Postmaster-General.



# Trade Report.

Office of THE IRON AGE,  
WEDNESDAY EVENING, Sept. 12, 1878.

The past week has been a comparatively quiet one in financial circles. The money market continues easy without change in call loans and discount rates.

The event of the week has been the decline in the gold premium to 100%. This decline was caused by the treasury order authorizing the exchange of silver dollars for greenbacks. This meets the principal demand that hitherto existed for gold coin. The range of the premium has been between 100% and 100%.

Government bonds have been strong, with a slight decline toward the close of the week. State bonds are quiet; railway mortgages strong and in fair demand. The Secretary of the Treasury has called another block of \$5,000,000 5.20 six per cents. Below we give the closing quotations of governments.

The stock market was brisk early in the week, but declined toward the close. The principal dealings have been in Lake Shore, St. Paul, Northwest, D. L. & W. and Erie. We give below the closing quotations of active shares.

The last weekly statement of the New York banks shows a loss of \$3,312,200 in total reserve, which is made up of \$3,205,000 legal tender notes, and \$47,200 specie. On account of the increase in deposit liabilities the surplus reserve is reduced \$3,448,975, it now being \$13,458,800. A year ago the surplus reserve was \$12,621,975, and the banks then held an average of \$19,971,600 specie and \$45,303,900 legal tender notes. The following is a comparison of the bank averages for the last two weeks:

	Aug. 31	Sept. 7	Differences.
Loans.....	\$39,431,700	\$43,439,000	\$4,007,300
Specie.....	17,000,300	16,953,100	47,200
Legal tend'rs	53,948,500	50,683,500	3,265,000
Deposits.....	216,164,100	216,711,400	547,300
Circulation.....	19,438,700	19,062,300	376,400

The foreign trade movements for the week are shown in the following tables:

	For week ended Sept. 7:	1876.	1877.	1878.
Total for week.....	\$4,117,508	\$4,075,726	\$5,085,487	
Prev. reported.....	199,885,904	227,388,511	192,915,743	

Since Jan. 1.....\$204,003,602 \$231,644,237 \$198,001,230  
Included in the imports of general merchandise were articles valued as follows:

	Quantity.	Value.
Animals.....	89	\$540
Brass goods.....	17	900
Bronzes.....	18	6,191
Chains and anchors.....	33	1,000
Cutlery.....	25,680	25,680
Gas fixtures.....	5	1,278
Guns.....	32	9,700
Hardware.....	10	1,738
Iron, pig, tons.....	17	1,738
Iron, sheet, tons.....	17	1,499
Iron ore, tons.....	200	461
Iron, other, tons.....	876	21,773
Metal goods.....	103	14,400
Nails.....	3	3,330
Needles.....	10	5,443
Per. caps.....	10	3,574
Saddlery.....	10	543
Steel.....	10,886	10,886
Spelter.....	10	298
Silverware.....	10	91
Tin, bxs.....	16,641	74,722
Tin, 600 lbs.....	22,697	3,156
Wire.....	1	546

EXPORTS, EXCLUSIVE OF SPECIE.

	For week ended Sept. 10:	1876.	1877.	1878.
For the week.....	\$4,876,524	\$6,007,457	\$8,087,816	
Prev. reported.....	176,506,613	182,785,454	230,948,936	

Since Jan. 1.....\$181,437,137 \$188,799,911 \$239,936,734

EXPORTS OF SPECIE.

	For week ended Sept. 7:	1876.	1877.	1878.
Total for the week.....	\$40,710	\$40,710	\$40,710	
Previously reported.....	10,200,735	10,200,735	10,200,735	

Total since Jan. 1, 1878.....\$10,259,445  
Same time in 1877.....23,312,787  
Same time in 1876.....39,833,722  
Same time in 1875.....62,450,072  
Same time in 1874.....42,171,442  
Same time in 1873.....41,291,302  
Same time in 1872.....57,234,820

Government bonds close as follows:

	Bid.	Asked.
U. S. Currency's.....	107 1/2	108
U. S. 6's 1881 registered.....	107 1/2	108
U. S. 6's 1881 coupon.....	107 1/2	108
U. S. 6's 1885 new reg.....	107 1/2	108
U. S. 6's 1885 coupon.....	107 1/2	108
U. S. 6's 1887 reg.....	107 1/2	108
U. S. 6's 1887 coupon.....	107 1/2	108
U. S. 6's 1888 reg.....	107 1/2	108
U. S. 6's 1888 coupon.....	107 1/2	108
U. S. 10-40 coupon.....	106 1/2	107
U. S. 4's 1881 registered.....	105 1/2	106
U. S. 4's 1881 coupon.....	105 1/2	106
U. S. 4's 1884 registered.....	105 1/2	106
U. S. 4's 1884 coupon.....	105 1/2	106
U. S. 4's 1887 registered.....	105 1/2	106
U. S. 4's 1887 coupon.....	105 1/2	106

The following were the closing quotations of active shares:

Atlantic and Pacific Telegraph.....	30 3/4	31
Chicago and Northwest.....	36 1/2	36 1/2
Chicago and St. Paul.....	68 1/2	68 1/2
Chicago, Rock Island and Pacific.....	117 1/2	117 1/2
Chicago, Bur. and Quincy.....	110 1/2	110 1/2
Col. Chicago and Ind. Central.....	3 1/2	3 1/2
Clev. Col. Cin. and Ind.....	3 1/2	3 1/2
Cleveland and Pittsburgh.....	80 1/2	80 1/2
Chicago and Alton.....	84	84
Canton.....	16 1/2	16 1/2
Delaware, Lack. and Western.....	31 1/2	31 1/2
Delaware and Hudson Canal.....	49 1/2	49 1/2
Express-Adams.....	104	105
" American.....	48 1/2	49 1/2
" United States.....	48	49 1/2
" Wells, Fargo & Co.....	48	49 1/2
Erie.....	14	14 1/2
Harlem.....	137 1/2	138 1/2
Hannibal and St. Joseph.....	14 1/2	14 1/2
Illinois Central.....	37 1/2	38
Kansas and Texas.....	79	79 1/2
Lake Shore.....	2 1/2	2 1/2
Michigan Central.....	66 1/2	66 1/2
Milwaukee and St. Paul.....	69 1/2	70 1/2
" Prof.....	59 1/2	60 1/2
New York Central.....	113 1/2	114
New Jersey Central.....	33 1/2	34 1/2
New Jersey Southern.....	1	1 1/2
Ohio and Mississippi.....	1	1 1/2
Pacific Mail.....	16 1/2	17 1/2
Panama.....	127	127 1/2
Pittsburgh and Fort Wayne.....	98	98 1/2
Quicksilver.....	30	30 1/2
St. Louis Kansas City Northern.....	4 1/2	4 1/2
Toledo, Wabash & Western.....	80 1/2	80 1/2
Union Pacific.....	15 1/2	15 1/2
Western Union Telegraph.....	95 1/2	95 1/2

## GENERAL HARDWARE.

There is an active, healthy demand for nearly all descriptions of seasonable goods. The market for General Hardware is, as a rule, firm in its tone, although, as our readers are aware, some few lines of goods are selling at prices which may be fairly called irregular. There are no changes of importance to notice in lists or discounts.

The demand for Nails is generally reported fair and prices continue as previously reported. We continue to quote rod, to 60d., \$2.20, net, but for lots of 100 kegs and over this price could be shaded.

The Shepard Hardware Co., Buffalo, N. Y., have placed on the market Shepard's Patent Combination Spider and Steamer, which they quote at \$18 per dozen, net.

The Philadelphia Screw Co. desire to contradict a report that has been circulated to the effect that they had declined to meet the market for Screws and shut down their factory. They inform us that they are running full time and selling at current discount. The treasurer of the company states that the report doubtless originated from the fact that they withdrew their commission accounts on the 1st of August, believing that selling direct from works was their true policy.

Hatry & Friend, Pittsburgh, Pa., have issued the following price list, under date of 3d inst.:

PITTSBURGH, Sept. 3, 1878.  
Since the issue of our last circular, values have advanced and the market has stiffened materially, with strong upward tendency; we advise stocking up, and beg leave to quote the market about as follows:

Iron, assorted orders, 1.70.  
Nails, 2.00 rates for rod.  
Sheet iron, light gauges, 2.70 rates for No. 24 as a basis.  
Plate iron, 1/2, 3-16 and 1/4 in. thick, 2.30c. per lb.  
Tool Steel, 1 1/2c. per lb.  
Machinery Steel, 7c. per lb.  
Tire Steel, 3 1/2c. per lb.  
Window Glass, 75 per cent. discount from list.  
Borax, ref., in cases, 100 lbs., 9 1/2.  
Babbit Metal, 7c. per lb.  
Juniata Horse Shoes, 3 1/2 cts. per lb.  
Mule 4 1/2

We also have the best facilities for filling orders for Gas Pipe, Boiler Flues, Bridge and Roof Bolts, both Iron and Steel Rails, Fish Plates and Bolts, and all kinds of railroad supplies. Our stock is large, and we can fill orders promptly. Above prices are 60 days, or 2 per cent. off for cash.

Maltby, Curtiss & Co., No. 34 Read street, illustrate in their advertisement on page 26 their new Tin-Key Faucets. They make these Faucets in maple wood with or without keys. They also show in their advertisement illustrations of other specialties, including Knife Sharpeners, Glass Cutters and Capewell's Giant Nail Puller. They are sole agents for the product of the Norwich Pistol Co.

Tennis & Wilson invite the attention of the trade to the "Little Giant" Nut Cracker, which is illustrated in their advertisement on page 12. This Nut Cracker, which is small and neat in appearance, is suitable for table use and convenient for carrying in the pocket. By an ingenious application of the principle of compound leverage, it is made so powerful that the hardest nut can be broken with very slight exertion.

The Nottingham Daily Guardian of the 22d ult. contains the following testimony regarding the high quality and temper of Henry Disston & Sons' Saws:

"That the foreigners are pressing us hard in many manufactures in which we thought ourselves all but unapproachable, is unfortunately too stubborn a fact to be disputed by impartial men, however much our handicraftsmen themselves may affect to look down on foreign workmanship. America is foremost in the race, and we find from the reports sent to a Sheffield contemporary, and by letters which are appearing in its columns from practical men, that the metropolis of cutlery will have to bestir itself if it does not wish to be beaten in a branch of trade in which it has hitherto stood unrivaled—we mean the manufacture of Hand-Saws. It was stated in the columns of our contemporary by 'A Sheffield Smith,' who had visited the Paris Exhibition, that the Saws shown by Messrs. Disston & Sons, Philadelphia, were superior to Sheffield-made goods. The statement elicited an angry denial from Mr. John Blenkinson, who based his negation on twenty-six years' experience of the trade. To him 'A Sheffield Smith,' who remarks *en passant* that he has had 29 years' experience of the trade at home and abroad, thus replies: 'I can tell you that I saw the tool of which I wrote; that it was submitted to the severest tests, in fact, I remonstrated with the exhibitor, told him that he was trying to break it, and I stood back a few paces for fear he should, to the danger of both of us. I am aware that the ordinary test for an ordinary Hand-Saw is to be able to bend it into a semicircle without injury to it, but in this case the attendant stuck the point of it into the floor, then rapidly drove the handle down to the same, and subsequently coiled it over his hand to a degree that astonished me. I concluded that it had been made expressly for the occasion, and said as much to him, when he assured me that all which they exhibit are from their common stock, excepting that they are selected free from flaws, of speck or blemish, and that the experiments he then showed to me had been repeated 500 times with the same goods, and any maker or user of a Saw knows that frequent springings diminish the elasticity of it until restored by the application of heat to its surfaces. This Saw was ground to perfection, being many gauges thinner at the point than butt, which aided it materially.' Now, if 'A Sheffield Smith' is not utterly wrong, it is evident that the Saw manufacturers of Sheffield must look to their work more sharply. Being angry and scornful will neither sell their Saws nor make them better than the American ones. The Americans have driven us out of the colonial

market for Axes, and if the men of Sheffield do not put their shoulders to the wheel they will do so also for Hand-Saws.

We have received the following circular:

CIRCULAR.  
Having noticed a very uncalled-for attack upon American Planished Sheet Iron in a circular issued by a New York broker a few days since, worded as follows: "Russia Iron has advanced fully 1/2 cent per pound owing to reduced stock and no import arrivals expected before the middle of September, and more particularly by the unexpected large demand, inasmuch as the Patent Planished, after three years' trial, is found not fitted for general use." We, the undersigned, dealers in Russia and Planished Iron, feeling it due to the manufacturers of Planished Iron, do hereby contradict the assertion that "after three years' trial it is not found fitted for general use," and are glad to be able to testify that we have sold it for five years past with very general satisfaction in every way, and are yearly increasing our sales, as it continues to grow in favor with our customers, and we think that it will eventually drive the imported iron from the market, as we now have but little demand for the latter, when compared with former years.

John Dunlap, Pittsburgh, Pa.; Fleming, Agnew & Co., Pittsburgh, Pa.; A. Bradley & Co., Pittsburgh, Pa.; Park, Scott & Co., Pittsburgh, Pa.; Wm. Blair & Co., Chicago, Ill.; Hibbard, Spencer & Co., Chicago, Ill.; Sidney Shepard & Co., Chicago, Ill.; Seeburger & Breakey, Chicago, Ill.; Chicago Stamping Co., Chicago, Ill.; Cragin, Bros. & Chandler, Chicago, Ill.; S. B. Munson, Jr., Supt. Corrugated Elbow Co., Chicago, Ill.; R. Sellow & Co., St. Louis, Mo.; Excelsior Manufacturing Co., St. Louis, Mo.; Bridge, Beach & Co., St. Louis, Mo.; M. M. Buck & Co., St. Louis, Mo.; B. Horton & Co., St. Louis, Mo.; F. H. Lawson & Co., Cincinnati, O.; Chas. H. Law, General Supt. Corrugated Elbow Co., Cincinnati, O.; Sidney Shepard & Co., Buffalo, N. Y.; Standart Bros., Detroit, Mich.; Buhl, Ducharme & Co., Detroit, Mich.; Ducharme, Fletcher & Co., Detroit, Mich.; John Nazro & Co., Milwaukee, Wis.; C. Shepard & Co., Milwaukee, Wis.; John Pritzlaff, Milwaukee, Wis.; Wm. Bingham & Co., Cleveland, O.; Geo. Worthington & Co., Cleveland, O.; Bostwick, Braun & Co., Toledo, O.; G. Tritch, Denver, Col.; Bridgeford & Co., Louisville, Ky.; W. B. Belknap & Co., Louisville, Ky.; George L. Farwell, St. Paul, Minn.; Mayo & Clark, St. Paul, Minn.; Strong, Hackett & Chapin, St. Paul, Minn.; R. A. Culter & Co., Peoria, Ill.; Greer & King, Dayton, Ohio; Thos. G. Cottrell, Indianapolis, Ind.; Andrews, Tredegar & Sons, Dubuque, Iowa; Westphal, Hinds & Co., Dubuque, Iowa; J. MacLay & Co., Dubuque, Iowa; J. H. Roelker & Co., Evansville, Ind.; Donahue & McCosh, Burlington, Iowa; Lloyd & Clark, Lacrosse, Wis.; Kennedy, Spaulding & Co., Syracuse, N. Y.; McCarthy & Redfield, Syracuse, N. Y.; L. Schillinger, Syracuse, N. Y.; Hamilton & Mathews, Rochester, N. Y.; Pollock, Weaver & Goss, Rochester, N. Y.; Sherman D. Phelps & Co., Binghamton, N. Y.; Irving D. Booth, Elmira, N. Y.; F. B. Austin & Co., Boston, Mass.; Samuel May & Co., Boston, Mass.; Bruce & Cook, New York, N. Y.; N. L. Cort & Co., New York, N. Y.; Alan Wood & Co., Philadelphia, Pa.; Merchant & Co., Philadelphia, Pa.; J. Wood & Bros., Philadelphia, Pa.; Holbrook, Merrill & Stetson, San Francisco; Milton Rogers, Omaha, Neb.; Moore & Book, Gold Hill, Nev., and others. September 1st, 1878.

## IRON.

American Pig.—We cannot report any improvement in the market. Buyers are few and transactions are easily effected at prices below our quotations, except perhaps in the case of some special brands. The failure of the Oxford Iron Co., particulars of which will be found in another column, has had little or no effect on the market, as they consumed nearly all the product of their furnaces. It has had the effect, however, of increasing the doubt and uncertainty regarding the immediate future of the Iron business. We hear of the sale of 5000 tons Nos. 2 and 2X Thomas, on private terms. We quote, nominally, Foundry No. 1, \$16.50 @ \$17.50; Foundry No. 2, \$15.50 @ \$16.50, and Gray Forge, \$14.50 @ \$15.50.

Scotch Pig.—The transactions in Scotch Iron are confined within the narrow limits of the local demand; such sales as are reported rarely exceed 10 to 20 ton lots, and the aggregate of the week's business in this market does not amount to a fair-sized order in ordinary times. The arrivals at this port since our last writing amount to about 200 tons. We quote Glengarnock, \$23.75; Eglington, \$22.75, and Coltness, \$24.

Rails.—We hear of some inquiry for both Steel and Iron Rails, but no sales are reported. We quote as before: Steel at mill, \$43 @ \$44, and Iron, according to quality, terms, &c., \$32 @ \$36.

Old Rails.—Nothing has transpired in Old Rails, and we quote as before, \$17 @ \$18, which is the nominal price here.

Scrap.—We quote No. 1 Wrought from yard, \$21 @ \$22.

## METALS.

Copper.—Since our last the market has been quiet but firm, sales not exceeding 350,000 pounds. Lake Superior at 16¢ @ 16 1/2¢, which is the range at the close. Baltimore we quote 16 1/2¢, nominally. In futures nothing has transpired. There is no change by cable at London. Inquiry on the part of manufacturers is rather on the increase in the New York market, the demand being for medium-sized lots, to be delivered at once. This is a good sign. Manufacturers are of course still cautious, and confine their purchases to immediate requirements; but if prices remain firm for some time longer they will take courage and show less hesitation in laying in larger supplies. The London Mining Journal of August 31 contains

the following passage: "The demand has been very limited, but prices have been steadily maintained. The deliveries for the month are supposed to about balance the arrivals, and therefore the statistical position has probably undergone but slight change; the exact figures, however, will appear in course of a day or two, and the trade will then have the opportunity of seeing which way the market is turning. We need scarcely remark that the stock on the 1st inst. was quite as large as it need be for all practical purposes, and if it were somewhat less no inconvenience would be experienced by consumers in obtaining ample supplies, whereas a reduction might impart some degree of confidence and induce buyers to give out orders which they may be withholding until they are thoroughly satisfied that the market has reached a safe level." The foregoing shows that the feeling in England is somewhat analogous to the sentiment prevailing among consumers here. From the moment the latter shall have become convinced that prices have pretty nearly touched bottom, a large demand will probably spring up and reduce stocks all of a sudden. Manufactured Copper is in moderate demand at the combination prices, which are unchanged. Yellow Sheathing Metal is dull and English is nominally quoted 12 1/2¢ @ 13¢, and American, 13¢ @ 13 1/2¢. We quote: New Sheathing Copper, 26¢; Braziers, 28¢; and Bolts, 28¢; American Yellow Sheathing Metal, 13¢ @ 13 1/2¢; Yellow Metal Bolts, 25¢; and English Yellow Sheathing Metal, 12 1/2¢ @ 13¢, currency, in bond.

Tin.—Our market continues quite flat at 13 1/4¢ for Straits on the spot. Several parcels are offered to arrive, but do not find buyers. Since our last 150 tons Australian Tin have arrived, and it is said other shipments to this market are afloat. We quote large lines as follows: Straits, 13 1/4¢; English Refined, none here; ditto Common, 13 1/4¢, nominally; Australian, 14 1/4¢; and Banca, 16 1/2¢ @ 17¢. Singapore has declined to \$18 per picul, with an exchange of 3/9. London cables £58 for Straits. Shipments from Australia to England in August were 1250 tons, making 3500 tons for the last three months, against 1800 tons during the corresponding period of 1877. This extraordinary increase requires no further comments. We find the following passage in the London Mining Journal of Aug. 31: "The tendency of the market has been to ward lower prices, and as long as supplies keep ahead of the demand this must necessarily continue to be the case; at present, therefore, very little prospect exists of improved value, as stocks to-morrow are not unlikely to show a further increase. The latest accounts by mail from Tasmania state that the discoveries of Tin on the West Coast have been checked by the approach of winter. The Mount Bischoff mines were retarded some time by a strike among the miners for an increase of wages from 7/6 to 9/2 per day of eight hours, but the company sent over to Victoria and procured the men required without difficulty. Under these circumstances the supply of Tin from Tasmania will probably show no falling off, nor is it likely that there will be much falling off elsewhere." Tin Plates.—This article is remarkably quiet. We quote at the close large lots, per box, as follows: Charcoal Bright, \$5.87 1/2 @ \$6; do. Ternes, \$5.37 1/2 @ \$5.50; Coke Tin, \$4.75 @ \$4.87 1/2, and do. Ternes, \$4.25. The following is from Liverpool dated Aug. 29: "No material change, demand for our principal market, the U. S., continuing very unusually light. This naturally is having a depressing effect on holders of second-hand parcels, many of whom, to realize, would accept bids 3d. under latest figures, and from 6d. to 9d. under makers' prices for same brands. Until these speculators' lots are cleared off we can hardly look for an improvement in price of Coke Tins."

Lead.—Sales have been confined to 200 tons Common Domestic at 3.45¢. Fine Lead may be quoted 3.60¢. The visible supply at New York and in our immediate vicinity is, between stock and afloats, some 8000 tons, 3500 tons of which are held by financially strong parties resolved to hold on to their stock. Lead is dull in England; they quote English Pig, £16. 17/6, and Sheet, £16. 15/6. There is no change in manufacturers' prices, and we quote Bar, 5¢; Pipe, 5¢; Sheet, 6¢; Tin-lined Pipe, 12¢; No. 1 Solder, 8 1/2¢, all less 10¢ to the trade.

Spelter and Zinc.—Like all other metals Common Domestic Spelter has been very dull during the week, but it is none the less firm at 5¢. In Europe it remains steady. Sheet Zinc.—The market is quiet and prices nominal. We quote: Domestic, 6 1/2¢ @ 6 3/4¢, and Mosselman, 7 1/2¢ @ 7 3/4¢.

Nickel.—This metal remains firm at \$1.10 @ \$1.30. Telegraphic dispatches have reached us from New Caledonia, via Australia, that the insurrection had not yet been suppressed, but that the natives were continuing to hold the field in the mountain districts.

Antimony.—The two leading English brands still command 12¢ @ 12 1/2¢ here. The demand is fair and the stocks are not heavy. London is stronger, but unaltered.

## COAL.

The course of trade the present week has been marked by no changes worth mentioning. The larger or steam sizes continue unchanged. Lehigh steam Coals are scarce, and, consequently, full circular rates are realized. In softer Coals it is rumored that prices are not quite up to circular rates. Indeed, we have heard the rumor that prices have on some sizes of domestic Coals been shaded to the extent of from 5 to 30 cents. The causes which tend for the time to produce dullness in domestic sizes do not affect steam Coals to the same extent. The general opinion in the trade still continues to be that there will be little change in the large Coals. This opinion is based upon what is manifestly not only the best policy of the companies, but their necessities as well. In discussions concerning any future advance in the price of Coal we have not yet heard any suggestion of an advance which would injure manufacturers. The great quantity of Coal in stock, both in private houses and in retailers' yards, prevents the market

from showing the activity which would naturally be expected about this season of the year. Bituminous shows little or no change since our last mention of it. Prices are very low, and, as a consequence, they have a strong influence in keeping down the price of Anthracite.

## EXPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Sept. 10, 1878:

Danish West Indies.	Quan. Value.	Iron rails.	Quan. Value.
Hdw., cs., 15	\$64	Cutlery, cs., 13	\$50
Cartridges, cs., 15	378	Gas fixt., cs., 7	184
Mach'y, cs., 3	119	Ag. imp., pgs., 13	665
		Grindstones, 155	308
		Pumps, 5	799
		R. R. cars, 14	255
		Nails, kegs, 59	120
		Tel. mls., pgs 10	335

Hamburg.	Quan. Value.	Porto Rico.	Quan. Value.
Brass, cs., 435	51,935	Belted, cs., 7	180
Millstones, 192		Nails, kegs, 11	67
P'd ware, cs., 8	296	Hdw., cs., 15	309
Mf. iron, pgs., 4	90	Mf. iron, pgs 12	269
Ag. imp., pgs., 11	680	Nails, bxs., 7	92
Belted, cs., 5	2,053		
Hdw., cs., 148	3,358		
Mach'y, cs., 47	8,571		
O'ge mls., pgs 7	253		
Spelter, slabs, 1734	5,300		
Copper, bbls., 5	1,585		
Revolvers, cs., 1	260		

Antwerp.	Quan. Value.	Rotterdam.	Quan. Value.
Hdw., cs., 57	1,474	Hdw., pgs., 37	384
Ag. imp., pgs., 10	719	Wringers, cs., 23	130



## OLD METALS, PAPER STOCK, &amp;c.

Business in Old Metals has somewhat improved since last week. Copper, Brass, Composition and Lead are in good demand, but other stocks are in little request. In the Rag and Paper stock market there has been a slight call for some articles, but on the whole the market is extremely dull.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy.....	per lb. \$0.13 @	...
Copper Bottoms.....	" 10 1/2 @	...
Yellow Metal.....	" 10 @	...
Brass, heavy.....	" 09 @	...
Brass, light.....	" 07 @	...
Composition, heavy.....	" 11 1/2 @	...
Lead, solid.....	" 02 1/2 @	...
Tea Lead.....	" 02 @	...
Zinc.....	" 02 1/2 @	...
Pewter, No. 1.....	" 09 @	...
Pewter, No. 2.....	" 07 @	...
Wrought Iron.....	prton. \$16.00 @	...
Light ".....	" 8.00 @	...
Stove Plate.....	" 8.00 @	...
Machinery do.....	" 12.00 @	...
Grate Bars.....	" 3.50 @	...

The prices current for Rags, &c., are as follows:

Canvas, Linen.....	per lb. 3 c. @ 3 1/2 c.	...
" Cotton, No. 1.....	" 3 1/2 c. @	...
" No. 2.....	" 3 c. @	...
White, No. 1.....	" 3 1/2 c. @	...
" No. 2.....	" 3 c. @	...
Seconds.....	" 2 c. @	...
Mixed, Woolen.....	" 2 c. @ 3 c.	...
Soft, do.....	" 6 1/2 c. @ 7 c.	...
Gunny bagging.....	" 3 1/2 c. @	...
Jute butts.....	" 3 1/2 c. @	...
Kentucky bagging.....	" 3 c. @	...
Book Stock.....	" 2 1/2 c. @	...
Newspaper Stock.....	" 1 c. @ 1 1/2 c.	...
Waste Paper and scraps.....	" 1/2 c. @	...
Kentucky Bale Rope.....	" 4 c. @	...
Oakum, Junk, No. 1.....	" 4 1/2 c. @ 5 c.	...
" No. 2.....	" 3 c. @	...
Tarred Shaking.....	" 1 c. @ 1 1/2 c.	...
Grass Rope.....	" 2 1/2 c. @	...

## PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St. |  
Philadelphia, Sept. 10, 1878.

Business has been quiet during the past week, and we hear of nothing calling for special remark. The failures of large firms in the Iron trade, it is hoped, will clear the business atmosphere and enable solvent concerns to realize a fair return for their capital. The extensive concerns whose failures have recently been announced were notorious for underselling, and their disappearance, it is expected, will benefit the trade at large.

We regret to announce the death of Mr. David Stuart, of the well-known firm of Stuart, Peterson & Co., stove founders, of this city. Also of Mr. George Dawson Coleman, widely known in connection with the Lebanon furnaces in this State.

Mr. C. A. Lyman, Iron factor, has removed his office to 319 Welling's alley, corner of Walnut place. Mr. Lyman has probably been in the business a greater number of years than any one else in the city, having been upward of 20 years at his former location, 116 Dock street. Messrs. Malin & Co., have also removed to 216 South Fourth street.

**Pig Iron.**—The market is still dull and the movement chiefly confined to small lots of the best grades of Foundry Irons. The feeling among sellers is a trifle better, however, and there is less pressure to realize unless at something near quoted rates. There is also an evidence of willingness on the part of buyers to increase their purchases when concessions can be obtained. In fact, a general belief seems to prevail that bottom prices have been reached, and that any change whatever will be toward an advance. This feeling has not led to any perceptible increase of business, but buyers are watching the market closely, so that if there are indications of improvement they may place their orders at the low figures now ruling. The decreased output, the belief that prices are now below cost of production and the absolute certainty that cost cannot be reduced, have led to the conviction that an advance is only a question of time. Hence with a dull market, owing to limited consumption, there is a feeling that with a general improvement in other branches the Iron market will quickly respond. At present, however, there is no movement to warrant any increase in prices, and sellers appear to be well satisfied to realize current quotations, which for some time past have been more nominal than real. The next few weeks will probably determine the course of the market for the balance of the year, but no important change is anticipated. At present the declining tendency appears to have been checked, and a steady, healthy demand is about all that the trade hopes for. We note a number of sales of certain brands of No. 1 Foundry Iron at \$18 @ \$19, in small lots, and for these prices are steady and firm; but for average Lehigh brands \$17.50 @ \$18 is nearer the market, with still lower prices when large lots are taken. We quote: No. 1 Foundry, \$17.50 @ \$18; No. 2, Foundry, \$16 @ \$16.50; Gray Forge, \$15 @ \$16; White and Mottled, \$14.

**Blooms.**—The market continues dull and heavy; to effect sales in quantity prices have to be shaded. The following figures fairly represent the market: Sunken Scrap Blooms (246 lb.), \$38 @ \$39; Northern Scrap Blooms (224 lb.), \$33 @ \$37; best quality Charcoal Billets (224 lb.) for wire and steel purposes, \$58 @ \$60; Bars do., \$62.50 @ \$65; Sheet Iron Blooms, cornered (246 lb.), \$53 @ \$55; Cold-blast Charcoal Plate Blooms, \$50 @ \$53; run-out Anthracite, \$45 @ \$47.50.

**Structural Iron.**—The market is unchanged, both in regard to price and demand. A large portion of the work on hand at the mills is from contracts taken in the spring, but there is a steady inquiry for small lots which imparts activity to the trade and a feeling of confidence in regard to the future. We do not hear of any heavy orders offering, the latest being the one mentioned in our last for government account. There is some inquiry for bridge purposes, and prospects that orders will be given out in course of the week, but the amount is not of special importance. We quote as before: Angles, 2.25 @ 2.45; Tees, 2.45 @ 2.55; Beams and Channels, 2.75 @ 2.85.

**Plate and Tank Iron.**—The condition of the market is unchanged. The majority of the mills are still actively employed in completing former contracts, and as a rule are not in a condition to accept orders requiring immediate deliveries. Small lots can be had without difficulty, but the full capacity of the majority of the mills will be required to meet the demand upon them during the current month. In some cases orders have been declined solely upon the ground that deliveries could not be made as promptly as required. Prices are nominally changed, but it is said that there is less disposition to cut than there was some time ago, and quoted rates are pretty near the figures which sellers now obtain, viz.: Common Plates, 2.25 @ 2.35; Tank Iron, 2.35 @ 2.55; C. No. 1, 2.45 @ 2.65; Shell Iron, 2.75 @ 2.95; Flange Iron, 3.75 @ 4.50; Solid Firebox, 4.85 @ 5.50; and Best Bloom, 5.50 @ 6.00.

**Sheet Iron.**—There is a fair demand, and up to this date a full average business has been done, with good prospects for the balance of the season. There is no change in prices, however, and not much probability of any in the immediate future. A leading manufacturer intimates that an improvement is realized already, inasmuch as a large business is now actually being done at prices which a little while ago were merely nominal. To market all the stocks carried and the product of the mills for the balance of the season is about as much in the way of further improvement as the trade expects. Some large orders have been received from the Pacific coast, and with the closing of some large mills in the Western part of the State a healthy trade seems to be assured. We quote: Common Sheet, No. 20 to 23, 2.85 @ 2.95; No. 24 to 26, 2.95 @ 3.05; No. 27 to 28, 3.15 @ 3.25; Best Refined Sheet Iron, No. 16 to 21, 3.15 @ 3.25; No. 22 to 24, 3.15 @ 3.25; No. 25 to 28, 3.35 @ 3.45; Best Bloom Sheets, No. 16 to 21, 4.75 @ 4.85; No. 22 to 24, 5.00 @ 5.10; No. 25 to 28, 5.25 @ 5.35; Common Red Plates, 5.16 to 18, 2.45 @ 2.55; Refined Plates or Blue Annealed, 5.16 to 18, 2.45 @ 2.65; American, R. G., 5.16 to 18, 2.95 @ 3.15; Best Bloom, 5.16 to 5.18, 4.95 @ 5.05; Philadelphia Russia, 6.55; A. Patent Planished, 10 1/4; B. Patent Planished, 9 1/4; Bloom Galvanized, 40%; Refined Galvanized, 50%, with extra discounts for large lots.

**Bar Iron.**—Some of the merchants report an improvement, but this is no doubt owing to the strike and suspension of business at the city mills. The firmness in the Western market and the slight advance in freights ought to be felt, and no doubt would be if there was an active demand. Prices show no improvement, however, so that it is very improbable that transactions are anything beyond an average, and we doubt if they are even that. This condition of affairs reveals something of the extreme depression which the Iron trade is now suffering. Production is locally almost entirely suspended, while, as above mentioned, higher prices and higher freights fail to influence the market in the least. The strike continues at the mills, with no prospects of the employers surrendering, and, in fact, they appear well satisfied, in the present condition of the market, to keep their mill closed. The action of the men will probably be a considerable saving to the mill owners. A large number of applications for work at the reduced wages have been received, but as yet none of the mills have started up. The Philadelphia Iron and Steel Company had a large contract for Beams, &c., which, at a considerable loss, they are understood to have transferred to a Western firm. So far as known the other mills have no contracts on their books, and can well afford to wait for a better market or cheaper labor. We quote the market dull and unchanged at 1.50 @ 2.00, according to quality and quantity.

**Steel Rails.**—The demand is not specially active, but buyers for large lots are watching the market, and when favorable terms can be had are ready to place their orders immediately. Sellers are not anxious for business, however, unless at full prices, so that in the mean time transactions are confined to lots of a few hundred tons each at current quotations. The Bessemer Steel trade seems to be in a very healthy condition. Prices are steady and a considerable amount of orders are on hand, and more offered at former prices. Sellers appear disposed to wait the course of events under the impression that prices will be quite as satisfactory when they are ready to fill the orders as at present. We quote the market steady at 43¢ @ 46¢, according to section, time of delivery and location of mill.

**Iron Rails.**—The market maintains a strong tone, and sales to the extent of about 2500 tons have been effected during the week, at something beyond medium quotations. There are several additional orders in the market, but business is restricted owing to the close scrutiny which sellers observe in regard to collaterals. Business is in a healthy condition, the mills generally having a good deal of work on hand, with more offered at former rates. We quote prices steady at from \$32 @ \$34 at mills, according to section, quality and terms of payment.

**Old Rails.**—Without any sales of importance the market seems to be firmer, and sellers disposed to hold for higher figures. The offerings are quite light, and as there are inquiries for several good-sized lots higher prices are looked for. Small lots have changed hands at \$19 @ \$19.50, and these may now be regarded as minimum rates, with higher prices asked for first-class makes. Market quiet and firm.

## PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, |  
Pittsburgh, Pa., Sept. 10, 1878.

While general business here is not what it should be at this season of the year, it is improving, nevertheless; and now that that bugbear the bankrupt law is no more, confidence is becoming restored and there is a much better and more hopeful feeling in regard to the immediate future. With good crops and the national finances undisturbed, in connection with the fact that stocks of nearly all kinds of goods both in hands of jobbers and consumers are very much reduced, we have sufficient reason to believe that better times are near at hand, and it is earnestly hoped that the expectations now entertained may be fully realized. That terrible scourge, yellow fever, has caused an almost entire cessation of business in the

Mississippi Valley, and as it is not likely to subside until the frost comes, no improvement in trade in that direction can reasonably be looked for until November. We have a large trade with New Orleans, Memphis and nearly all the leading points of distribution in that great valley, particularly in Coal and Iron products, but at present it is almost entirely cut off, and will not be revived while the pestilence continues to number its victims by hundreds, as at present.

The improvement in the Iron business noted for two or three weeks past still continues; mills are nearly all running, some of them double turn, and this without any effort on the part of our manufacturers, some of whom are refusing to make large contracts at current rates. The Steel mills are also quite busy, with a firmer feeling in regard to prices. The Nail market continues in a very unsatisfactory and unsettled condition, with but little prospect of any improvement this fall. Nearly all our oil refineries have been in operation for some time past, but refiners outside of the Standard combination claim that there is little or no margin for profit. The outsiders allege that the railroads give the Standard a much lower rate of freight to the seaboard than is allowed to the outsiders, and that while they have hard work to keep even, the Standard, in consequence of this discrimination, has a good margin, and, according to the outsiders, is making plenty of money.

It is Joseph, not D. M. Barbour, that was appointed trustee to wind up the business of the late iron firm of Lewis, Dalzell & Co.

The iron and steel mill of Reese, Graff & Wood, was sold last Friday and purchased by John Graff, who was one of the largest creditors, and held a mortgage against it. It is probable that the steel department of the mill will be started up shortly.

**Pig Iron.**—There has been nothing particularly important developed in the course of the market during the past week. While business continues rather slow for the season, prices, especially for good mill irons, are firm, and the trade generally anticipates an early advance. As stated in our report of last week, some holders are virtually out of the market, and so confident are they of an improvement that they are refusing to sell at current rates. Moreover, the supply of the article in question, not only here but at all points tributary to this market, is light, the production for several years past having been very meager, and there is an increasing demand for it, as the mills must have some for mixture to bring up the quality of their poor stock. There is no scarcity of poor iron, and it is offering freely at easy prices, but manufacturers have discovered that of the use of a poor quality of the raw article the product will also be poor, and those of them anxious to keep up the reputation of their goods are obliged to buy some good pig even if they do have to pay considerably more for it. Bituminous Coal Smelted Irons are selling at \$18 @ \$19, 4 mos. for Foundry, and \$17 @ \$18.50, 4 mos. for Mill, according to quality, some holders asking \$19, 4 mos., for all ore red shorts.

Coke Irons—\$16 @ \$17, 4 mos. for Forge. Charcoal Irons very dull, owing to the fact that cheaper irons are taking their place. Sales of No. 1 Foundry at \$23.50 @ \$24, cash, and No. 2, at \$21, cash. It looks as if the days of Charcoal Irons were numbered, as it is said that they cannot be made to compete with coke and other irons, and consumers are refusing to make much difference; the hoop mills at one time used considerable charcoal, but they are now refusing to buy it unless they can get it at about the same price as other irons. This being the case, it is not likely that many of the charcoal furnaces, especially those unfavorably located, will ever be started up again unless the cost of production can be very materially reduced as compared with what it is at present. Bessemer Iron is firm and higher, and we now quote at \$20, 4 mos., delivered here in Pittsburgh.

**Manufactured Iron.**—The situation here remains much the same as noted in our last report; mills are pretty generally busy, as intimated in our report of last week. Our manufacturers are not disposed to sell largely either for present or future delivery at current rates, from which it is evident that they expect better and desire to keep themselves in a position to take advantage of an improved market; in other words, they are unwilling to fill their order books now, and if prices should advance, as seems probable, thereby put the jobbing trade in a position to undersell them. The "strike" in the East, as well as the very materially reduced production in the West, has caused a firm feeling on the part of our manufacturers, and then the fact that stocks, both in hands of jobbers and consumers, are comparatively light is not without its influence in the same direction. Prices may be quoted for assorted orders on a basis of 1.70¢ @ 1.80¢, 60 days, for Merchant Bars.

**Nails.**—There has been rather more inquiry of late and a firmer feeling on the part of makers, but no improvement in prices. While \$2, 60 days, still appears to be the ruling rate, our manufacturers, as a rule, are refusing to make any large contracts at the figure in question, which, it is said, affords no margin for profit. It is said that sales are being made below the quoted rates, and the fact that some jobbers are retailing at \$2 rates leads to the belief that such is the case, as it is not likely that jobbers would buy and sell at the same price.

**Wrought Iron Pipe.**—There is only a moderate business, but it is hoped that it will improve this month and next. Business thus far this year has not been equal to that of the same time in 1877. Discounts on Water and Gas Pipe, 60 @ 65 per cent.; Boiler Tube, 40; Oil Well Casing and Tubing, net cash.

**Horse and Mule Shoes.**—There is a fair business but no change in prices; 100 keg lots, \$3.50 and \$4.50; larger lots special rates.

**Steel.**—The demand continues fairly active for all the leading grades and specialties, and prices, if anything, are firmer but unchanged; mills are generally reported well supplied with orders and the outlook is all that can be expected. Tool Steel, 10 1/2¢ @ 12 1/2¢, according to quality; Spring Steel, 6¢ @ 7¢; Machinery, 5¢ @ 7¢; Tire Steel, 4¢ @ 5¢; Boiler Plates, 7¢ @ 8¢.

**Rails.**—Steel Rails firm but unchanged; \$44, cash, at mill; Steel Blooms, \$40. Steel Billets, \$44; Steel Rail Ends, \$28, all cash, delivered at mill; Old Iron Rails, \$20 @ \$21, cash, according to quality, most sales at \$20.

**Castings.**—Those of our founders making a specialty of mill and heavy machinery castings have a very fair trade, but the general foundry business is dull for the season.

**Scrap.**—The Scrap trade continues quiet and dealers generally report prices for most articles weak and in buyers' favor. Old Car Wheels, nominal, at \$17 @ \$18, gross, and very dull; Boiler Scrap, \$22 @ \$23, net; No. 1 Wrought, \$20 @ \$21, net.

**Coke.**—Is still quoted at \$1 per ton at mines, or \$2.15 delivered free on boards cars in Pittsburgh.

## CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts. |  
CHATTANOOGA, Sept. 10, 1878.

Yellow fever to the South and Southwest has embargoed all sorts of business in the lower valley of the Mississippi. There is nothing doing there, except the care of the sick and burying the dead. Naturally when an epidemic is so widespread and goes where the same disease has before been unknown, there is uneasiness and alarm at all points where refugees from infected cities flock. This feeling has somewhat limited business in Chattanooga, where hundreds from New Orleans, Vicksburg, Memphis and other fever-stricken points have fled. Some cases of refugees have died here of yellow fever, all the deaths being of persons who brought the disease with them from Memphis. These occurrences have scared a good many country people, and they fear to market their produce, and the town is somewhat short of vegetables, &c., though as yet no advance has been made in prices of food supplies. The Iron trade, considering the elimination of the Southern market, has not only held up, but shows at the close of the week more strength than has been apparent for some time. All the mills are full of business, with no stocks ahead and orders coming in freely.

**Pig Iron.**—Trade has been dull; orders come in freely from the North and Northwest. The demand from those quarters has been in sufficient volume to justify holders in establishing and adhering to a slight advance in Coke Irons, which will undoubtedly be maintained and improved upon before winter. We quote: Coke Irons, No. 1 Foundry, \$17.50 @ \$18; No. 2, \$15.50 @ \$16; Gray Forge, \$13.50 @ \$14; White and Mottled, \$11.50 @ \$12. Hot-Blast Charcoal—No. 1 Foundry, extra, \$20 @ \$21; do., \$18 @ \$20; No. 2 Foundry, \$16 @ \$18; Gray Forge, \$15 @ \$17; White and Mottled, \$15. Cold-Blast Charcoal—Car Wheel Metal, \$22.50 @ \$27.50; do., Extra Standard, \$24.60 @ \$29.50; Forge, \$17.60 @ \$22.

**Muck Bar.**—\$27 @ \$34; Old Rails, \$17 @ \$17.50. Old Car Wheels, \$18.

**Ores.**—Brown Hematite, 50 to 56%; 7¢ ton, \$1.75 @ \$2.25. Red Ferriferous, 50 to 56%; 7¢ ton, \$1.70 @ \$1.90. The above prices for ores delivered in Chattanooga on cars or on the wharf from flat boats.

**Nails.**—The market is in the same condition as at last report, "only more so." The fever-embargoed districts, where the Pittsburgh and upper Ohio mills had their stocks stored in large quantities, and which they were pressing for sale at prices about sufficient to cover costs have made those mills more anxious to realize on their summer shipments. Memphis would be a good point now for a yellow-fever-proof merchant to buy Nails in as an investment. Probably 10,000 kegs could be had there at \$1.95 rates. Our mills here long since contracted their trade to the central South, and left the Ohio and Pittsburgh mills in undisputed possession of the market; they had run down to quotations, which indicated loss rather than profit, and though they were forced to accept a pretty sharp reduction they have not yet, nor will they, run at a loss. We quote at \$2.25 rates, though sales are made above those figures, and none below them.

**Manufactured Iron.**—There is a cheerful feeling among manufacturers, though trade is somewhat less brisk, and orders less plentiful than they had looked forward to. Railroad supplies are brisk. Bar we quote at \$2; Rail Road Spikes, \$2.50; Light Rail, \$2.25; Track Bolts, \$3; Trestle Bolts, \$4.

**Coke.**—We quote at \$2.50 per ton on cars in Chattanooga.

**Coal.**—We quote run of mine to manufacturers at \$1.50 @ \$2 per ton on cars at Chattanooga.

## BOSTON.

SEPT. 7.—Pig continues to meet with a very light trade, but some dealers report a better feeling. Nails have improved a trifle, jobbing now at \$2.30 @ \$2.35, against 2 1/4¢ a few weeks ago. For 100 keg lots 2 1/4¢ is still the price. Sheet is selling at 3¢ @ 3 1/4¢ per lb. Russia is quiet at 10 1/4¢ @ 11¢. We quote English Spring Steel at 7¢ @ 8¢, gold; 9¢ @ 11¢ for German; 9¢ @ 11¢ for Machinery; 14¢ @ 15¢ for Cast; 10¢ @ 12¢ for Blister; 8¢ for American Spring; 13 1/4¢ @ 14¢ for Cast; 9¢ for Blister; and 8¢ for Machinery. In Plate Iron the only activity in this market is in Tank, which is selling steadily at 2 1/4¢. Boiler Plate is very dull, quoting 2 1/4¢ for No. 1 Charcoal, 2 1/4¢ for No. 1 Shell, and 3 1/4¢ for Flange. The Atlas, from Liverpool, brought 18 bbls. and 7 cs. steel, H. B. Jackson; 510 bbls. coiled rod iron, American Screw Company; 105 bbls. bar iron, J. B. Moors & Co.; 507 bars iron, Nightingale & Kilton; 196 bbls. steel, order. The Bulgarian, from Liverpool, brought 22 cs. and 74 bbls. steel, order. Copper continues dull and easy, with small sales at 16¢. For manufacturers we quote: New Sheathing at 24¢ @ 26¢. The outside price rules in small transactions; but large buyers are purchasing at the inside figure. Bolts are quoted at 26¢ @ 28¢. Yellow Metal Sheathing continues very weak, quoting 13¢ for English and 13 1/4¢ @ 14¢ for American; Yellow Metal Bolts 18¢ @ 20¢. Lead is quiet and steady, with light sales. We quote: Pig, 3 1/4¢ @ 3 1/2¢, currency; Sheet, 6¢; Pipe, 5¢; Tin-Lined Pipe, 12¢; Bar Lead,

5¢; all of these excepting Pig are subject to the usual trade or 10% discount. Antimony is dull and unchanged, with sales of Boston spot lots at 11 1/4¢ @ 11 1/2¢. Spelter continues firm, with little disposition on the part of buyers to sell on the spot at less than 5¢ for 10-ton lots. Tin is quiet and unchanged. The Atlas, from Liverpool, brought 275 bbls. tin plates, F. B. Austin & Co.; 100 bbls. do., J. B. Moors & Co.; 962 bbls. do. do., order. The Bulgarian, from Liverpool, brought 752 bbls. tin plates, order. We quote: Straits, 14¢ @ 14 1/4¢; Banca, 17 1/4¢ @ 17 1/2¢; Refined English, 14 1/2¢ @ 14 3/4¢, gold. We quote Plate: Charcoal, I. C., \$6 @ \$6.25; Coke, \$5.12 1/2 @ \$5.25; and Tarnie, \$5.25 @ \$5.50, gold.—Commercial Bulletin.

## ST. LOUIS.

Special report by Messrs. SPOONER & COLLINS, Iron Commission Merchants, 217 North Third street, under date of Sept. 5: Demand for Pig Iron the past week has been only fair; prices, however, remain firm. Cheap Southern Irons are growing scarce. We think that the first advance, if any, will come on those grades of Iron. Old Rails are still in fair demand, prices ruling about the same.

	No. 1.	No. 2.	Mill.	White and M.T'd.
Missouri Stone Coal.....	\$22.00	\$21.00	\$19.00	\$17.00
Missouri Charcoal.....	30.00	19.00	18.00	16.00
Tenn. Charcoal.....	30.00	19.00	17.00	16.00
Tenn. Coke, very soft and strong.....	30.00	19.00	17.00	15.00
Hang. Rock Charcoal.....	24.00	23.00	21.00	20.00
Hang. Rock Cold-short.....	23.00	21.00	20.00	19.00
Alice and Sarah Hang. Rock Coke.....	23.00	21.00	20.00	18.00
Michigan Blackband Ores.....	23.00	22.00	21.00	19.00

## COLD-BLAST CHARCOAL—All Numbers.

Hang. Rock.....	4 mos.	\$28.00 @ 33.00
Tennessee.....	4 mos.	25.00 @ 30.00
Kentucky.....	4 mos.	25.00 @ 30.00
Missouri.....	4 mos.	25.00 @ 30.00
Georgia.....	4 mos.	25.00 @ 30.00
Alabama.....	4 mos.	25.00 @ 30.00
Assorted Bar Iron.....	1.75 rates.	
No. 1 Wrought Scrap.....	7¢ cwt.	
Heavy Cast Scrap.....	"	
Light ".....	"	
Old Rails, 7¢ ton.....	4 mos.	19.00 @ 20.00
Old Car Wheels, 7¢ ton.....	4 mos.	17.00 @ 18.00

## CINCINNATI.

Messrs. E. L. HARPER & Co. (successors to Messrs. L. R. HULL & Co.), under date of Sept. 7, write us as follows: During the past week the demand for all grades of Foundry Iron has been good. The call for Gray Forge shows no perceptible increase, but the stocks in producers' hands being light prices remain unchanged. We note more of a disposition among consumers to make large contracts, and a corresponding reluctance on the part of furnaces in extending present prices beyond immediate delivery.

## HOT-BLAST FOUNDRY.

Hang. Rock C. C., No. 1.....	\$21.00 @ 22.00
" C. C., No. 2.....	19.50 @ 20.50
Alice, No. 1 Extra, I. M.....	21.00 @ "
" No. 1 " N. O.....	20.00 @ "
" No. 1, N. O.....	19.50 @ "
Hang. Rock Coke and S. C., No. 1.....	17.00 @ 20.00
" S. C., No. 2.....	15.00 @ 16.00
Virginia Coke, No. 1.....	19.00 @ 20.00
" No. 2.....	17.00 @ 17.50
Shaynee S. C., No. 1.....	18.00 @ 19.00
" S. C., No. 2.....	16.00 @ 17.00
Hocking Valley S. C., No. 1.....	18.00 @ 19.00
" S. C., No. 2.....	16.00 @ 17.00

## FORGE IRONS.

Hang. Rock, No. 1 C. C.....	19.00 @ 19.50
Hang. Rock, No. 1 Coke.....	17.00 @ 17.50
Longdale, No. 1 Coke.....	17.00 @ "
Ala. and Tenn. No. 1 C. C.....	17.00 @ "
Red-short, No. 1 Coke.....	18.50 @ 19.50
Cold-short, No. 1.....	15.50 @ 16.00
Old Rails, prime.....	18.00 @ 19.00

## CAR WHEEL AND MALLEABLE IRON.

Hang. Rock C. B.....	30.00 @ 31.00
Cherokee C. B.....	28.00 @ "
Southern and Western Brands.....	28.00 @ 30.00

## LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Sept. 9, write us as follows: The market continues firm at full price. Several furnaces have advanced their limits. This has curtailed sales somewhat, but there is no disposition on the part of these furnaces to accept price current last week, and appearance indicate that the advance will be maintained. The usual time, 4 months, is allowed on quotations below:

## FOUNDRY IRONS.

No. 1 Hang. Rock, Charcoal.....	\$21.00 @ 22.00
No. 2 ".....	19.00 @ 20.00
No. 1 Southern, Charcoal.....	18.50 @ 19.00
No. 2 ".....	17.00 @ 17.50
No. 1 Hang. Rock, Stonecoal and Coke.....	19.00 @ 20.00
No. 2 Hang. Rock, Stonecoal and Coke.....	18.00 @ 18.50



At Braidwood, Ill., the miners average only about two days a week.



## INDUSTRIAL ITEMS.

## MASSACHUSETTS.

The Boston Belting Company has emerged from its financial troubles, and under its new board of officers and increased capital is now on a sound and substantial basis. Its capital is now \$700,000, with E. S. Converse for treasurer, William H. Furber for manager and James B. Forsyth for manufacturing agent. The works of the company are claimed to be the largest in the world for their specialty, namely, the manufacture of india rubber goods for mechanical and manufacturing purposes, and while no cessation of operations has taken place during their troubles, many improvements have been introduced during the past few weeks. The leading articles of their manufacture, and which originated with them, are belting, packing and hose.

Clark & Co., machinists, Pittsfield, are running full time, but with force reduced to about 20 men.

Beecher & Peck, New Haven, Conn., have been busy for several months getting out their drop presses and lifters, having just completed an order for six drop presses for Wallace & Sons, Wallingford, Conn.; also three drops for Western parties. They are forging carriage hardware for the Oppenheim Mfg. Co.

## NEW YORK.

The Taylor Iron Works, at High Bridge, have received a considerable order for cast iron chilled car wheels, to be shipped to South America. Their trade with the Southern Continent is increasing.

## PENNSYLVANIA.

The big puddling mill of the Allentown Rolling Mill started on Monday evening of last week, an order lasting about two weeks having been received. This will start up 11 furnaces.

The Leeburg tin plate and sheet iron mills are on to their full capacity day and night with fair prospects.

The engine of the furnace of the Pottstown Iron Company, which has been idle for the greater part of a year, was given a trial recently and ran very satisfactorily.

We take the following from the Sharon Herald of the 6th inst.: For the week ending Aug. 31, at the Western Iron Works, puddle mill, double turn; hoop mill, double turn the greater portion of the week; bar and sheet mills, single turn; nail plate and nail factory on; guide mill, off all week—making repairs on furnace; sheet mill goes on double turn on Monday of present week, and likely to remain so for three or four months; chain factory still working. No. 2 blast furnace working off well, as usual, nearing its fortieth month. Brick not come yet for the repairing of No. 1. Everything looking serene and good signs of a continuance. At the Kimberly Mill, puddle, bar, guide and both hoop mills double turn; nail plate mill and nail factory still off. They are not keeping up with the guide iron, and it looks as though they might be forced to light up the Greenville mill. If the hoop orders continue much longer something must be done, for the Sharon mill can't keep it up. At the Stewart Iron Works nothing of any importance has taken place during the week. No. 1 still running and doing well; still shipping iron, and no doubt, getting the money or its equivalent for it. At West Middlesex, the mill went on Tuesday, as surmised last week, with six furnaces, six heats a day. There are one or two good signs for running to their fullest capacity. They were visited by a slight fire on Saturday morning; it started on the roof close to the ventilator, but it was mastered before damage of any moment was done. Only one furnace, Douglas No. 2, running at Sharpsville.

The Dunbar Furnace is making from 75 to 80 tons of iron per day.

The Mont Clare Iron Works, of Mont Clare, Montgomery county, opposite Phoenixville, have received a large contract for furnishing the machinery and castings for the Mexican Mining Company, of Mexico.

The William Penn Blast Furnace, at Norristown, has blown out.

The Pottstown Iron Company shipped in one day last week 1700 kegs of nails.

The Phoenix Iron Bridge Building Company have completed the work on the Lebanon Valley iron bridge which is to take the place of the wooden structure now spanning the Schuylkill, and which was put up temporarily after the burning of the brick and wooden bridge in July, 1877, by the rioters. The iron bridge, in sections, will be shipped the early part of next week.

Messrs. Dewitt, Morrison & Kelly, of Philadelphia, manufacturers of augers, are busy and prospects for a fall trade good.

G. W. Kraft, of the Keystone Iron Works, Philadelphia, manufacturers of gas meters, &c., has finished six purifiers for the city of New York and has still four to complete.

The Philadelphia Galvanizing Works are busy, principally on sheet ironwork.

The Asbestos Patent Fiber Company, of Philadelphia, manufacturers of patent packing and steam pipe covering, &c., are busy, with prospects of a good fall trade.

A contract has been made by a firm of car builders for a large quantity of screws, the product of the Philadelphia Screw Company. For this class of work, and for carriage builders, these screws have a high reputation.

## PITTSBURGH AND VICINITY.

The iron mill of Reese, Graff & Woods was sold last Friday morning to Mr. John Graff, of Graff, Bennett & Co., for \$40,000. This sale attracted considerable attention, and a large number of the creditors of the firm and former workmen were present to see what the property would bring. The mill is placed on the schedule of assets of the firm at a large sum. Mr. John Graff is a brother of one of the firm of Reese, Graff & Woods, and held a mortgage on the mill for \$75,000.

Spang, Chalfant & Co., Sharpsburg, are running single turn.

The Pittsburgh Forge and Iron Company, of Allegheny, are running single turn in all departments.

The puddle department in Byers, McCullough & Co.'s mills, South Side, started single turn last Wednesday week.

Porter, Bell & Co.'s locomotive works af-

ter a short stoppage have resumed operations.

The Emblenton producers have awarded a contract for building a 15,000 barrel tank to the firm of Jones & Co., of Pittsburgh.

The bar and guide mills at Lewis, Oliver & Phillips, Allegheny, are on double turn.

The Dexter Spring Company, at Hulton, shipped some time ago a set of carriage springs to Melbourne, Australia, as a sample order. They gave so much satisfaction that they have received three orders for springs from that city recently.

The valve chamber cast by Thomas N. Miller, of the Atlas Works, for the old water works, has been tested. The requisite tensile strength of the metal was 25,000 pounds, but when Superintendent Atkinson tested a boring from the bottom of the chamber, two samples showed successively 28,902 and 28,482 pounds tensile strength.

A gang of laborers commenced Monday morning of last week to repair the old rail mill at Superior Station, on the Pittsburgh, Fort Wayne and Chicago Railroad. It is expected that the mill will be started up in a week or so.

The Crescent Tube Works at Soho are in full blast again. Mr. J. C. Lewis, formerly of Lewis, Dalzell & Co., is the general manager of the Crescent Tube Works, Limited, the new company running these works.

It is rumored that Mr. Jacob Reese, of the late firm of Reese, Graff & Woods, Pittsburgh, has secured control of the Canal Dover, Ohio, Rolling Mill, and will soon start it up.

The report that the Superior Iron Works, located in the lower portion of Allegheny, and last operated by Harbaugh, Matthias & Owens, has been leased to the firm of Carnegie, Bro. & Co. for the manufacture of rails, is without the least foundation.

## MARYLAND.

William Gilmer of Wm., of Baltimore, manufacturer of spikes, rivets, &c., is working to full capacity on Western orders and likely to be actively employed all winter.

The works of Poole & Hunt, of Baltimore, are situated at Woodbury, just outside the city, and cover about eight acres of ground. They have been principally busy lately on pulleys, shaftings and bevel and spin gears, the latter molded with their patent gear-molding machinery, which they claim to be the best system of molding, and which can mold any diameter from 1 to 20 feet and any size or shape of tooth. They supply quite a number of firms in the Eastern and Western States with pulleys, castings in the rough, and the parties then turn and boil them themselves. They also make the James Leffel double turbine water wheel, which they claim to be without doubt the standard water wheel; also machinery for saw, paint, grist and flouring mills. They have lately completed two of the largest fertilizer works in the United States, with mill gearing and machinery. Of this class of machinery they are considered the leading workers in the country, their patent mixers having a world-wide reputation. The admirable location and special facilities which this firm enjoy enable them to turn out the best class of work with the utmost expedition.

James Robertson & Co., of Baltimore, manufacturers of all kinds of shot and lead pipe, are very busy and are obliged to work over time to keep up with orders.

Henry McShane & Co., of Baltimore, manufacturers of bells, &c., are busy and have prospects of a good fall trade. They have just been awarded a medal at the Paris Exposition.

N. M. Rittenhouse, of Baltimore, manufacturer of all kinds of fire-bricks and drain pipes, has many inquiries which are expected to lead to a good fall business.

James Jervis, of 700 Battery avenue, Baltimore, manufacturer of all kinds of oyster knives, of which he makes a specialty, is quite busy and anticipates a good fall trade.

Joshua Regester & Sons, of Baltimore, brass and iron founders, make all kinds of bells, and also different classes of ironwork. They have a foundry and machine shop replete with all the latest improved machinery and have prospects of doing a large fall trade.

H. R. Ramsay & Co., Vulcan Iron Works, Baltimore, have many inquiries for their patent turbine water wheels, hoisting engines, &c., &c., which they expect will lead to a large business.

The Baltimore Car Wheel Company, Mr. W. S. G. Baker, president, are busy on home and foreign orders, and from reports from the different railways using their wheels they appear to be doing excellent work. This company use only the best quality of charcoal iron, made from the hematite ores found within and around the city of Baltimore. The great ductility and tenacity of this iron—its admirable chilling qualities, its freedom from the defect of spotting on the tread, to which most of the best chilling irons are liable—make it particularly suitable for wheels. The first chilled wheels ever made were of Baltimore iron and some of them are still in service. All wheels made by this company are annealed by their patent central flue system, used exclusively by them and believed to be the most perfect system of relieving wheels from strain.

## WEST VIRGINIA.

The Waldorf Furnace, formerly the Lancaster, at Ironton, went into blast on the 23d ult. after an idleness of four years. The property cost Baltimore parties nearly a quarter of a million of dollars, and is said to have passed into the control of Chas. S. Herd, of New York, for about one-tenth of that sum. Reasonable prospects of success are secured by the nearness to the furnace of all the raw material used. Days' labor, American and German, is secured at 75 cents a day for 11 hours work. About 150 hands are employed, and among the entire number not a case of intoxication has occurred, nor is card playing indulged in. Foundry iron is produced at the rate of 20 tons per day and of excellent quality. It is believed to be the only furnace in blast on the line of the B. & O. R. R. apart from Wheeling, and it is hoped that its advantages and the care and economy of its management will secure success. An important feature is the attention given to careful grading of the iron.

## OHIO.

The Western Lock Company, Geneva, expected to go into operation October 1st.

E. E. Pollard, of Columbus, has recently opened a shop for the manufacture of bird-cages and wire work of all kinds.

The Sandusky Tool Co. are making 20 dozen planters' hoes daily, and expect to double their capacity very soon.

The Cleveland Rolling Mill Company have shipped about 1500 tons of wire to the great Northwest this season—much of it to the State of Minnesota. It is used on the self-binding harvesters.

The Canton Wrought Iron Bridge Co. have been awarded the contract for building the new iron bridge across the Mahoning River, in Deerfield township, Portage county.

The big shears at Union Mill No. 2, Cleveland, were broken on Saturday morning, the 31st ult.

Younglove & Co., of Cleveland, employ some one hundred hands in making corn shellers, cider mills, mail catchers and architectural ironwork for all parts of the world. A large order was recently filled for Australia.

Claxton & Baster, Cleveland, have just shipped to South Newbury, Ohio, one of their drain tile and pressed brick machines. This is a new machine, the capacity of which is 20,000 bricks per day.

The Stockwell Screw and Machine Co., of Cleveland, are receiving large orders for their magic screw plate, which is meeting with great success wherever introduced. They have received large orders for their goods from San Francisco, Detroit and other cities. Their bolt cutter is spoken highly of by parties using it.

The Powell Tool Co., Cleveland, report business larger than last year at this time. Orders are coming in rapidly.

W. S. Craine & Co., of Cleveland, are busy on general and architectural ironwork. Hotchkiss & Gaylord, of Cleveland, are running full force of men, and report business good and plenty of orders.

The Union Steel Screw Company, of Cleveland, are running to their fullest capacity and said to be behind their orders.

The Union Iron Works, of Cleveland, closed down entirely last Saturday night, the 31st ult., but it is thought the mills will not remain idle long.

Taylor & Boggis (successor to H. & H. F. Taylor) iron founders, of Cleveland, are filling large orders for casting metal patterns, &c., at their shops.

The Champion Iron Fence Company, of Kenton, which had for some time been discussing the feasibility of removing to Springfield, recently decided to remain in Kenton for the present. This company has handled about 800 tons of fencing during this season, shipping to all the States in the Union excepting Colorado.

The Cleveland Paper Box Machine Company received a medal at the late Centennial Exposition, and news has just been received of the successful competition of their boxes at the Paris Exhibition. The capital stock of the company is \$100,000. D. P. Eells, Esq., is president; C. E. Bolton, vice president and manager, and J. H. Snow, secretary. Mr. Bolton is superintendent. Mr. Bolton sails September 5th for Europe in the interests of the company, which has just completed and is about to ship to Europe an invoice of machinery.

The South Cleveland Advocate says: Various statements have been put forth about the Union Mills and their future movements, but all these statements are no more nor less than surmises. No person knows what will be done yet. In the first place, there is an old lawsuit against the company which has been pending for seven or eight years, and the assignee has, of course, been made a party to it; and then there is a mortgage on the mills of \$90,000, held by a Mr. Wick, of this city. Both these obstacles have to be met. Up to date there has been no meeting of creditors called and the situation has been comparatively unchanged.

F. & H. Blandy, Zanesville, have recently received an order from the United States government for a 45 horse-power engine, planing mill, shingle and lath machinery. They have just shipped two 40 horse-power engines to Pennsylvania.

The Wassall Fire Clay Company, Columbus, who have been established four years, employ 40 men in the manufacture of sewer pipe, fire-brick and terra cotta ware. They make some ten different styles of lawn decorations from the latter material. They have a Western agency at Chicago, whither they have lately made large shipments, and they have lately had a large order from the Soldier's Home at Dayton. Their trade was about \$55,000 last year, and will be considerably larger this year.

Taylor & Co., Toledo, manufacture the Farmers' Friend scale, using no weights, a pattern peculiarly adapted for farmers. Its capacity is from 1000 pounds to 4 tons. They are also manufacturers of a gang plow which is a new pattern and meeting with a large sale.

The Russia Mill at Niles is working nine boiling furnaces double turn.

The 8-inch mill in the Falcon Iron and Nail Works, Niles, has been working for the last two weeks, and is the first work it has done for two years.

The plate mill at Newburg still continues idle, with no immediate prospect of resumption, as they are short of orders. Both sheet mills are running full.

The puddlers at the Akron Mill have been on single turn, making three heats each. The bar mill is working one furnace part of the time. The guide mill is on single turn, two sets of hands working every other day. The Laughlin Nail Company at Martin's Ferry resumed operations last Monday.

The heating furnaces of the Bellaire Rolling Mill and the nail department were put in operation last week.

**The Monetary Conference.**—The International Monetary Conference adjourned sine die on the 29th ult. The American delegation unanimously urged that some positive action be taken, but only obtained the declaration formulated in the reply of the European delegates to the proposition of maintaining the monetary use of both silver and gold and the freedom of each state to use either or both, and allow or disallow the free coinage of silver. A correspondent, summarizing the general result of the conference, says existing complications preclude

the formation of a monetary union. The English delegates pronounce the consequences of German demonetization disastrous. Monometalism is advocated by only three small states. The sentiment against the further demonetization of silver is overwhelming. The influence of the conference is deemed important for the future of silver. In addition to the resolutions contained in the reply to the American delegates, the European delegates adopted one thanking the government of the United States for having brought about an international exchange of opinion on important monetary questions; and another, that in view of the divergence of opinion which has been manifested and the impossibility even of those States having a double standard making any engagement relative to the unlimited mintage of silver, there is no ground for discussing the question of any international ratio between the two metals.

## Kimberly, Carnes &amp; Co.'s Affairs.

The schedule of Kimberly, Carnes & Co., of Sharon, Pa., who recently went into bankruptcy, was deposited in the United States District Court last Saturday. It shows the following:

Bills payable First National Bank of Greenville, \$10,000; Robert Dunham & Co., \$13,400; Forbes & Quincy, \$8371.10; Kimberly & Filer, \$10,038.17; H. B. Tuttle & Co., agents, \$10,900.70; First National Bank of Cleveland, \$15,000; Cleveland Iron Mining Company, \$17,320.57; National Bank of Lawrence County, \$21,500; Morgan & Co., \$285.17; Wampum Furnace Co., \$22,750; Sharon Iron Works store, \$14,975.93; Merchants' National Bank of Cleveland, \$10,000; Sharon National Bank, \$20,000; Green, Marquis & Ihmsen, \$2402.09; Thomas J. Porter, \$54,000; Snyder Coal Company, \$39,616.74; First National Bank, Sharon, \$32,000; Sharon Savings Bank, \$8000; Westernman Iron Co., \$4500; Sharon Mills Co., \$2000; Iron City National Bank, \$5000; Enoch Filer, \$4000; First National Bank, Warren, O., \$5000; S. Barnes & Co., \$1734.16; Greenville National Bank, \$6000; Spearman Iron Co., \$3500; Second National Bank, Cleveland, \$2256.44; Second National Bank, Erie, \$5000; Wampum Coal Co., \$4602.30; Bradley, Reis & Co., \$5911.38; Nimick & Co., \$100,000; First National Bank, Chicago, \$30,000; total, \$504,064.80. Endorsements by Kimberly, Carnes & Co.: Sharon National Bank, \$8813.43; Iron City National Bank, \$20,912.14; Citizens' National Bank, \$35,085.46; James Bleakly, Son & Co., \$317.10; Marine National Bank, Sharon, \$3228.12; Forest National Bank, Cleveland, \$10,892.94; First National Bank, Cleveland, \$11,740.10; Greenville National Bank, \$2912.20; Commercial National Bank, Cleveland, \$7000; Braddock's Trust Company, \$2366.76; Second National Bank of Erie, \$2245.25; Sharon National Bank, \$1306; First National Bank of Greenville, \$1000; Sharon National Bank, \$1473.80; Sharon Iron Works store, \$1318.73; Forker & Quimby, \$10,776.97; Snyder Coal Co., \$7856.55; Hickory Coal Co., \$1345.69; Tradesmen's National Bank, \$3500; H. B. Tuttle & Co., \$7386.04; total, \$190,783.26.

Accounts payable, including Nimick & Co., \$21,108.13; Dunham, Roberts & Co., \$16,001.51; Neshannock Iron Co., \$8400.62; Wetherbees, Sherman & Co., \$5012.05; Republic Iron Co., \$1959.74; Pennsylvania Co., \$2500; Kimberly, Forker & Co., \$305.92; Carnegie & Co., \$1242.91; Shenango & Allegheny Valley Railroad, \$1384.56; Edgar Thompson Steel Works, \$5024.95; John Bunyhoff, \$10,000; M. C. Trout, executor, \$4913.93; P. F. Condit & Co., \$9289.22; S. Kimbark, \$5685; Forker & Quimby, \$1728.45. The other amounts are all small. Total, \$137,472.30. Summary of liabilities: Bills payable, \$501,064.80; accounts payable, \$137,472.30; pay rolls, \$9553; total, \$651,190.10. Liabilities as indorsers, \$135,339.86. Grand total, \$786,529.96. Less secured claims, \$57,288.93, leaving a balance of \$729,241.03 as total liabilities. Assets, \$280,352.50. The valuations of stocks, bonds, real estate, material and accounts are put down at such figures as can probably be realized.

## Recent Court Decisions on Mercantile Subjects.

**Corporation Stock.**—The stock of a corporation may be held with a valid title without a certificate. The certificate is only one of the indicia of title. The right to the stock is in the nature of a non-negotiable chose-in-action.—Dewey vs. Predicavos, Supreme Court, United States.

**Surviving Partners.**—The surviving partner of a firm is entitled to the possession of the partnership assets, both realty and personalty, and cannot be dispossessed except for misconduct. The business of closing out the partnership concern belongs to the surviving partner, though the administrator of the deceased partner is bound to inquire into the survivor's conduct and protect the estate from mismanagement.—Merritt vs. Dickey, Supreme Court, Michigan.

**Partnership.**—To constitute one a partner it is not at all necessary that he should agree to share in the losses of the business. If he shares in the profits he thereby deprives creditors of part of the means of payment, and this is sufficient.—Lager vs. Tupper, Supreme Court, Michigan.

**Principal and Agent.**—A principal is responsible for the acts of his agent when he has either given the agent authority to do the act or justified the party dealing with the agent in believing that the latter had such authority.—Kasson vs. Noltne, Supreme Court, Wisconsin.

**Fraudulent Contracts.**—Where goods are obtained by means of a fraudulent purchase the vendor has the right to disaffirm the contract, so as to revert the property in himself and to recover its value in an action of tort against the vendee.—Dellone vs. Hull, Supreme Court, Maryland.

**Common Carrier.**—Where the consignor of goods shipped by an express company instructs the company not to permit the consignee to examine the goods before delivery and payment of charges, the agent of the company is authorized to refuse such exami-

nation, and incurs no personal liability by returning the goods to the consignor.—Wiltse vs. Barnes, Supreme Court, Iowa.

**Insurance.**—The Supreme Court of the United States has decided that insurance companies are bound by the acts of their agents, though performed after the agency had been terminated, unless notice of such termination has been given to parties who have previously dealt with them in their official capacity.

## LABOR NOTES.

The men of the Gore coal mine, at New Straitsville, Ohio, are out against a reduction to 40 cents per ton. All the miners have notified the other operators that they will not fill the Gore contract.

The Ohio Falls Car Company, at Jeffersonville, Ind., have over 500 men employed and turn out eight cars per day.

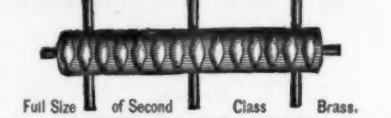
The Altoona Tribune, August 29th, says: The miners lately employed at Denniston, Porter & Co.'s coal mine, at Bennington, ten miles west of this city, are on a strike. The mine is not being worked at present. The men allege that some months ago they were getting 36 cents per ton, when a reduction of 6 cents was made, with the promise that it would be put back in July last. It was not restored, hence the strike. The owners of the mines say that they cannot afford to give the men their old wages, and that the neighboring mines are giving but 30 cents per ton.

The blast furnace at Scottdale has resumed work after having been idle nearly five months. The employers there called a meeting of their workmen a day or two before starting and offered a reduction. Outside hands are to receive \$1 per day and inside hands \$1.15 to \$1.40 for twelve hours' work. They have accepted the offer and gone to work.

Austria has now reached such a condition of financial credit that its paper money is at par with silver. This has been brought about by good crops and the prosperous termination of the war between Russia and Turkey. There is talk of a resumption of silver payments by the government, and there probably will be if the trouble in Bosnia does not compel larger expenditures than have been anticipated. If Austria should resume there would be a new demand for silver bullion in that direction, which would be of great service in stiffening the market for the commodity.



**John Maxheimer,**  
Manufacturer of  
Japanned, Tinned  
Wire,  
First and Second-  
Class Brass  
**Bird Cages.**  
Wires on both class  
fastened without solder.  
247 & 249 Pearl St.,  
New York.



**ALFRED H. HILDICK,**  
12 Warren St., N. Y.  
Importer of CHAINS, ANVILS, VISES, &c.  
Agency of  
HILL BROTHERS & CO., WALSALL, ENGLAND,  
GENERAL HARDWARE MERCHANTS,  
And of  
**BALL'S PAT. SOLID STEEL SHEEP SHEARS.**

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.



**NONESUCH**  
Self Locking  
and  
Burglar Proof  
Window Locks.  
Cheapest and best in  
the market. Send 25c.  
for sample, price list,  
&c., to  
**FRED J. HOYT**  
733 Broadway, N. Y.



**WM. ESTERBROOK,**  
Wholesale Manufacturer of  
**Coal Hods**  
**FIRE SHOVELS, Etc.,**  
311 Cherry St., PHILADELPHIA.

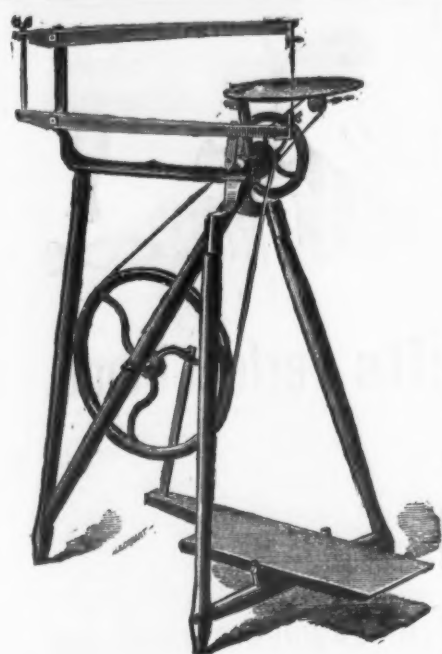


The Patent Combined  
**Dinner-Pail**  
AND  
**Lantern.**  
The most perfect Dinner Pail  
in the world. Hot coffee for  
dinner and a Lantern at night.  
Manufactured by JOS. HAIGHT,  
PORT CHESTER, N. Y.  
Agents Wanted.



**MACHINE MOULDED**  
**MILL GEARING,**  
AS ACCURATE AS CUT GEARING  
AND MORE DURABLE IN USE.  
Saves Time and Expensive Patterns,  
SHAFTING, PULLEYS AND HANGERS,  
A SPECIALTY,  
LEFFEL TURBINE WATER WHEELS,  
STEAM ENGINES AND BOILERS,  
MIXERS FOR FERTILIZERS AND CHEMICALS.  
**POOLE & HUNT, Baltimore.**





## THE ROGERS SAW.

With Drilling Attachment and Iron Table,  
Adjustable for Inlaying.

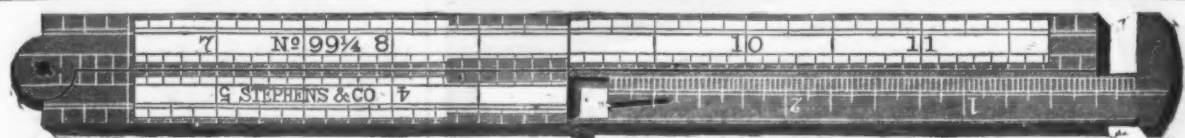
All the working parts of iron and steel. Weight, with box, 30 pounds.  
Height of table above the floor, 32 inches; 12-inch belt wheel; 5 inch balance wheel; arms, 18 inches in the clear; latest improved clamps; round belts; extra drills and wrench.

The iron and steel parts are polished or japanned. The wood is painted dark.  
It is not as good as our Lester Saw, but is much better than any other cheap machine in the market.

Price, including all the attachments and the box, \$3.00.

**MILLERS FALLS CO.,**

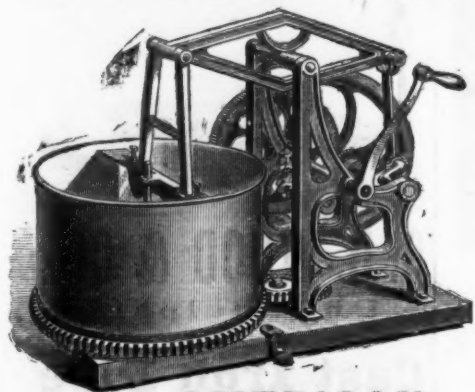
74 Chambers Street, - - NEW YORK.



**STEPHENS & CO.,**

Established in 1834. Manufacturers of **U. S. Standard BOXWOOD and IVORY RULES.**  
Also Exclusive Manufacturers of L. C. STEPHENS' PATENT COMBINATION RULE.  
Rules graduated in foreign measure to order.  
H. DURRIE & CO., New York Agents, who will supply the trade at factory prices.

## ATHOL MACHINE COMPANY,



**AMERICAN MEAT & VEGETABLE CHOPPER,**

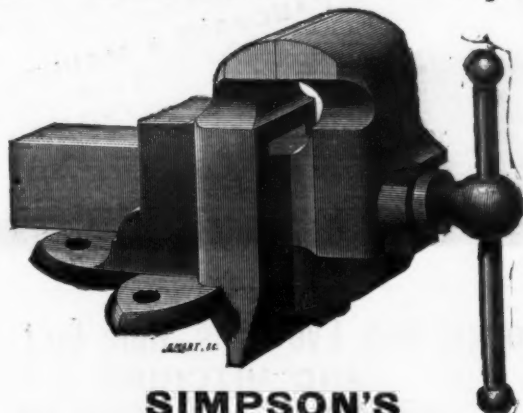
D. W. HOUGHTON, President.

J. S. PARMENTER, Treasurer.

D. A. NEWTON, General Manager.

Referring to above card, we take pleasure in advising our former patrons, and the trade in general, that we have made arrangements to sell and ship, in future, direct from factory, all goods of our manufacture. With location and shipping facilities unsurpassed, we can, at all times, guarantee to all points as low rates on freights as from either New York or Boston.

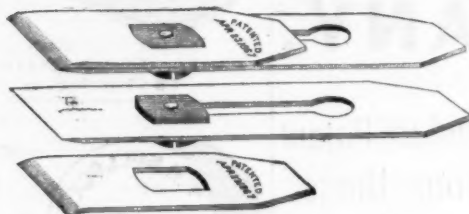
**THE BAILEY WRINGING MACHINE CO.,** 99 Chambers Street, New York, who have handled our goods for the last three years, will continue to act as General Agents. Special quotations for export. Send for price list.



**SIMPSON'S PATENT ADJUSTABLE VISE,**

ATHOL, MASSACHUSETTS.

## IMPROVED PLANE IRON.



We illustrate above a new

### Compound Plane Iron,

developing an improvement in the manner of adjusting the cap so simple, and yet so convenient, as to instantly recommend itself to all mechanics who have an opportunity of testing it. The cap iron can always be removed and replaced without turning the screw, which, in other Double Plane Irons, holds the cap in place and has to be loosened with a screw-driver every time the cutter is sharpened. This patented improvement will be used exclusively in Planes of our manufacture.

**BAILEY WRINGING MACHINE CO.,**

99 Chambers St., New York.

## SABIN MFG. CO.,

MONTPELIER, VT., Manufacturers of

**PATENT DOUBLE ACTING SPRING BUTTS,**

Sabin's Lever Door Springs,

**The BOSS and CROWN Door Springs,**

For Screen and Light Inside Doors,

## NATIONAL Horse Nail Co.

MANUFACTURERS OF

**FINISHED**

(BRIGHT OR BLUED)



These nails are made of the best brands of **NORWAY IRON**, and are guaranteed to be equal to any in the market.

**NATIONAL HORSE NAIL CO.,**  
VERGENNES, VT.

HORACE DURRIE & CO., Agents,  
No. 97 Chambers St., New York

**PUTNAM'S**  
HOT FORGED & HAMMER POINTED  
Horse Shoe Nails.



Made from the best of Norway Iron.  
The only hot forged machine made Horse Shoe Nail in the world that is not sheared or cut on the point. Warranted never to split or silver in the driving, and to hold the shoe longer than any other Nail. For sale by the hardware and iron trade generally.

**PUTNAM NAIL CO.,**  
P. O. Address, Neponset, Mass. BOSTON.

Established in 1839.

Formerly L. & A. G. Coes.

## L. COES & CO.

Manufacturers of L. Coes'

**GENUINE IMPROVED**

**AND MECHANICS**

## Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,  
MARCH 23, 1869,  
REISSUED 1870.

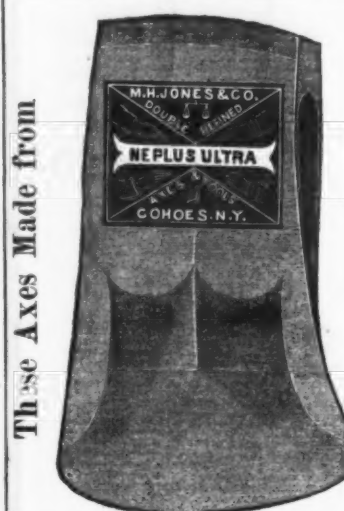
NOVEMBER 10, 1863,  
FEBRUARY 23, 1864,  
REISSUED JUNE 1, 1869,  
IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Handle.

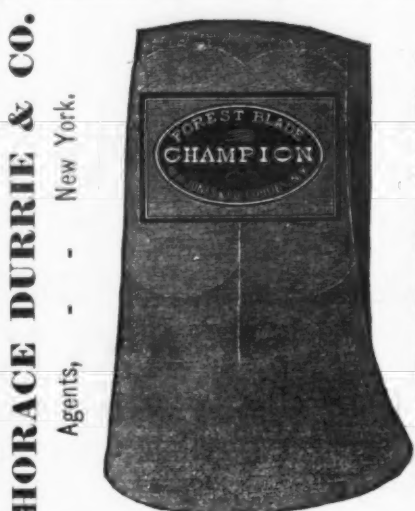
None genuine unless stamped "L. COES & CO."

**WORCESTER, MASS.**

Warehouse, 97 Chambers St., & 81 Reade St., N. Y.  
**HORACE DURRIE & CO.,** Sole Agents.



These Axes Made from



HORACE DURRIE & CO. New York.

Firth's Best English Cast Steel.

## The 1878 Pennsylvania Lawn Mower.

LIGHT DRAFT AND EASILY ADJUSTED.



This machine presents all the advantages of a light and durable LAWN MOWER, and we believe has good qualities which cannot fail to be appreciated. It is the lightest machine in use, and all that is necessary to satisfy our customers of its superiority is to place it in competition with any other machine in the town in which they may reside.

Every machine warranted to work as represented.

### PRICE LIST.

Width of Cutter.	Description.	Price.
12 inch.	8 in. driving wheel, wt. 33½ lbs. Can be used by a lad. each, \$18.00	
14 "	8 in. driving wheel, wt. 34½ lbs. Can be used by a lady. " 20.00	
16 "	8 in. driving wheel, wt. 36½ lbs. One man size. " 22.00	

GENERAL AGENTS:

LLOYD, SUPPLEE & WALTON, 625 Market St., Philadelphia.  
HORACE DURRIE & CO., 97 Chambers & 81 Reade Sts., N. Y.



ESTABLISHED 1850.

## WM. HASSALL,

Manufacturer of

American and French

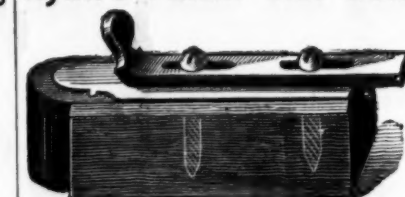
## Wire Nails

With Flat, Round, Oval, Depressed, Screw and Fancy Heads.

Molding and Finishing Nails, with or without heads. Brush Makers', Upholsterers', Cigar Box, Basket, Chair and Undertakers' Finishing Nails a specialty. Shoe Nails of Brass and Iron. Bright Iron Rivets. Brass and Iron Escutcheon Pins, with flat, round and fancy heads, all sizes on hand and to order.

OFFICE AND WORKS: Nos. 63 & 65 Elizabeth Street, New York.

## Hyatt's Patent Slot Bolt.



Patented Jan. 29th, 1878.

For Fastening Window Screens, Cabinet Ware, &c

We call the attention of the trade to these Wrought Brass Bolts as being the best and cheapest in the market. Sizes, two inches and upward, both plain and neck bolts. Two screws (as shown in the cut) fasten the bolt and bed-plate to the wood; no others are required, thus effecting a great saving in screws and producing a strong, handsome and cheap Bolt. Price list furnished on application.

**BRASS GOODS MFG. CO.,**  
Sole Manufacturers, 280 Pearl St., New York.  
We also manufacture all kinds of Brass Goods, Plate Escutcheons, Drop Bases, Thumbies for Door Knobs, Brass Labels, Patent Mirror Business Cards, &c.

CARROLL L. RIKER, JOBBER OF SPECIALTIES, offers the following regular specialties to the trade in the quantities and at the prices quoted: Coes' Pattern Malleable Wrench, 10 in. 24c ea.; 12 in. 26c ea.; Giant Nail Puller, \$2.50 ea.; and Little Giant ditto, \$1.50 ea.; Dover Egg Beater, family or tumbler size, 35c ea.; Mrs. Potts' Pat. Crown Irons, 5 pieces, \$1.25 per set; the Crown Plater, 4½ in. rolls, \$2.10 ea.; Clawed Tack Hammer, 6c ea.; the Lawrence Perfect Curry Comb, 5 bars, close back, 5c ea.; 5 bars, open back, 8c ea.; Homer & Co.'s Padlocks, No. 205, 1½ in. hith, 12c ea.; Mouse Traps, 15c per doz. holes; Heavy Adze Eye Malleable Hammer, full polish, 12c ea.; Marvin's Safes, 20 ½ off the list price; Marvin's Scales, 40 ½ off the list price; Fairbanks Scales, 30 ½ off the list; Seven-Chambered Revolver, warranted steel barrel and chamber, nickel-plated, 22 bore, with cleaner and box, \$1.20; Swift's Coffee Mills, discount 25 ½ from list. Screws by the single gross, 65 ½ off Russell & Erwin's list; Sand Paper, B. & Co.'s, fine, medium and coarse, 10c per sheet; Crystal Spring Toilet Soap, in half gross boxes, \$1.50 ea.; Solid, Leather Back Horse Brushes, 30c ea.; Blacking Brushes, \$1.00 per dozen; the same, extra fine, 30c ea. Terms, net cash before shipment; packing, 25c; cartage, 25c. Send postage for my illustrated catalogue containing cuts of several hundred different specialties. 104 Chambers and 72 Church Sts., New York.

## TACKLE BLOCKS

BURR & CO.,

Manufacturers of Waterman and Russell's

**Patent Iron Strapped Blocks.**

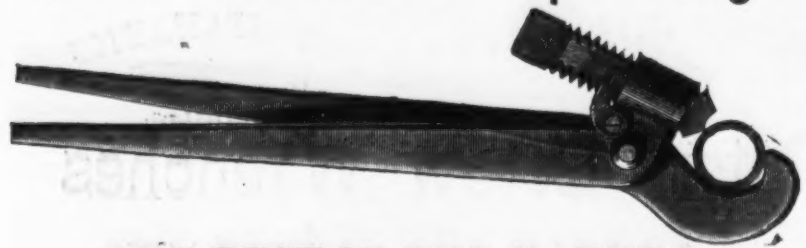
Also, Manufacturers of

**ROPE STRAPPED BLOCKS,**

31 Peck Slip, New York,



## JESSOP'S Patent Adjustable Pipe Tongs.



THE BEST IN THE MARKET.

Send for Samples.

EATON, COLE & BURNHAM COMPANY,

Sole Manufacturers,

58 John Street, New York.

**TACKS.**

**12 14 16 18 20 22 24 OZ.**

**10 8 6 4 3 2 1 1/2 1 OZ.**

**NAILS.**

**SWEDS IRON, UPHOLSTERERS', GIMP AND CUT TACKS.**

Tinned, Leathered and Large Head Iron Carpet Tacks.  
TRUNK, CLOUT AND FINISHING NAILS, BRADS, PATENT BRADS, &c.  
Lining, Saddle and Tufting Nails, Coffin Tacks and Tufting Buttons.  
COPPER, ZINC, STEEL & SWEDS & COMMON IRON SHOE NAILS, &c.  
Copper, Iron and Galvanized Boat Nails,  
Regular or Chisel Pointed.

Brass & Iron Wire Nails, Moulding Nails & Escutcheon Pins, Chair & Cigar Box Nails, 2d & 3d Fine Nails, Roofing Tacks and Nails, &c., &c.

MADE BY THE

AMERICAN TACK CO., Fairhaven, Mass.

A full line of goods may be found at our

NEW YORK SALESROOM, No. 117 Chambers Street.

Price, \$5.00.  
In Morocco Case, \$5.50.

**MICROMETER CALIPER,**  
Made by THE VICTOR SEWING MACHINE CO.  
Middletown, Conn.

This attractive and very desirable tool will be found more reliable and convenient than the Vernier Caliper, and to Machinists and Tool makers it is indispensable on work requiring very accurate and close measurement. Its capacity is one inch, and is graduated to one thousandths, but can readily be set one-half and quarter thousandths; and is so constructed that any wear resulting from use can be readily adjusted.

## McNab & Harlin Mfg. Co., MANUFACTURERS OF BRASS COCKS AND VALVES For STEAM, WATER and GAS. Iron Pipe and Fittings, Plain and Galvanized. PLUMBERS' MATERIALS.

New Illustrated Catalogue and Price List sent by express to the Trade on application.

Factory, Paterson, N. J.

56 John Street N. Y.

TO ALL WHO USE STEAM for POWER, HEATING, or any other purpose. If you would secure ABSOLUTELY DRY STEAM, and dispose of all water in your pipes as rapidly as condensed, examine BARR'S PATENT STEAM TRAP. The attention of those who have had past experiences with float traps is invited to the following advantages:—BARR'S TRAP has no floats, levers, or any complication whatever, every part is in full view. It is ABSOLUTELY AUTOMATIC; can be set to discharge at any desired pressure from 1 lb. up to any exposed situation where condensation is rapid and continuous. Can be set in any position, either side or end up, without interfering with its working, consequently, can be used in places where no other could be employed. If you would SAVE FUEL, send for circular to manufacturers.

**PANCOAST & MAULE,**  
243 and 245 South Third Street,  
PHILADELPHIA.

## Wrought-Iron Eye Bolts, Ring Bolts, Screw Hooks, AND HITCHING RINGS, BRIGHT AND GALVANIZED.



Manufactured and for sale by

**W. & J. TIEBOUT,**

Manufacturers of BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE,  
No. 290 Pearl Street, New York.

## MASON MANUFACTURING COMPANY.

Manufacturers of

**Standard Patent Spring Hinge.**

PRICES.

Single-Acting.

	Per pair.
2x2	\$.75
2 1/2 x 2 1/2	1.00
3x3	1.50
4x4	2.00
5x5	3.00
6x6	4.00

Discount to the Trade.

Manufacturers of

**Perfection Step Ladder.**

PRICES.

3 feet	\$2.50
4 "	3.00
5 "	3.50
6 "	4.00
7 "	4.50
8 "	5.00
9 "	5.50
10 "	6.00

Discount to the Trade.

Manufacturers of Step Ladders, Zinc Oilers, Oil Can Screw Tops, Metal Rings, House Furnishing Goods, and Jobbers in General Hardware. Send for our price list.  
FACTORY: 448, 449, 450 and 451 West St. OFFICE: 116 Chambers St., New York.

**MALTBY, CURTISS & CO., 34 Reade St., New York,**  
HARDWARE MANUFACTURERS

And Manufacturers' Agents. Sole agents for the Norwich Pistol Co. Send for circular and price list.



Tin Key Faucet.



Electric Knife Sharpener.

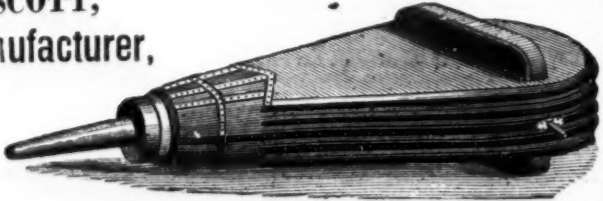


New Household Glass Cutter.



Capwell's Giant Nail Puller.

**GEO. M. SCOTT,**  
Bellows Manufacturer,  
Johnson Street,  
Cor. 22d St.,  
CHICAGO, ILL.



## The Magic Carriage & Wagon Jack.

Patented April 23, 1878.

PRICE, - - \$12.00 per doz.

Liberal discount to the trade.

**MAGIC JACK CO.,**

Sole Manufacturers and Proprietors,

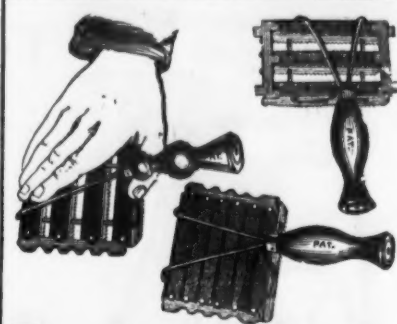
MISHAWAKA, IND.

Sargent & Co.,

Agents.

**Daman**  
STANDARD  
HOLLOW AUGERS.

**C. C. HARLOW & CO.,**  
BRIDGEWATER, MASS.,  
Manufacturers of DAMAN STANDARD HOLLOW AUGERS.—Universally acknowledged superior to any other in the market. They have recently been improved, making them, as now offered to the trade, the most perfect tools of their kind, either in design, material or workmanship. SPOKE AND DOWEL TRIMMERS.—The very best as well as the cheapest. METALLIC CORNERS & FLOW PLATE.—Made of solid cast steel and of gun metal. Of an entirely new design. Can be used as Groover, Dado and Rabbit Plane. In any direction of the grain, and also as a Match Plane. COMMON SENSE DOOR SPRING.—The most durable and cheapest Door Spring yet made. LEAD PIPE CUTTERS.—To cut lead pipe in any position and without chips or bars. Please send for circulars and prices.



## The Perfect Comb.

We call your attention specially to our new patent and wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a Perfect Comb. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: The Perfect Comb.

**THE LAWRENCE COMB CO.**

Factory and Office,

352 2d Ave., cor. 22d St., N. Y.

**WM. S. CARR & CO.**

Sole Manufacturers of

**CARR'S**

PATENT

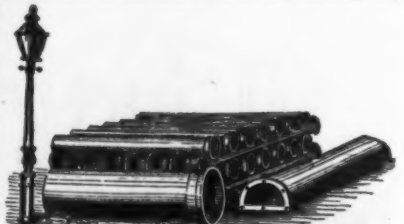
Water

Closets,

PUMPS, CABINET WOOD WORK, &c.

106, 108 & 110 Centre Street,

Factory, Mott Haven, NEW YORK.



**R. D. WOOD & CO.,**

Philadelphia,

Manufacturers of

**Cast Iron Pipe**

FOR WATER AND GAS.

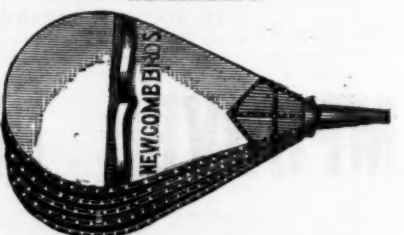
Lamp Posts, Valves, &c.,

Mathew's Pat. Anti-Freezing Hydrants.

400 CHESTNUT STREET.

**NEWCOMB BROS.,**

Manufacturers of



OFFICE & WAREHOUSE WITH

**C. E. JENNINGS & CO.,**

98 Chambers St., N. Y.

I invite attention to my

**PATENT**

**Reversible**

**Nozzle.**

These Bellows are

well adapted and put

up for export trade.

I manufacture all

sizes, with or without

this improvement.

**T. H. BULLOCK**

Maker,

CLEVELAND, O.

WAREHOUSE,

57 Beekman St.

New York.

SEND FOR PARTICULARS

EDWARD MANUFACTURING CO

CANTON OHIO.

Sole Manufacturers.

**CORN SHELLERS**

FOR

Home and Export Trade.

PRICES REDUCED ON ALL STYLES.

Before placing your orders send for illustrated

lists with discounts.

**H. N. HUBBARD,**

MANUFACTORY,

No. 323 East Twenty-Second St., New York,



# The Iron Age Directory

## and Index to Advertisements.

Agricultural Implements.	
Hubbard H. N., 32 E. 22d, N. Y.	26
Air Compressors.	
Wayton, James, 11 Water, Brooklyn, N. Y.	3
Alarm Money Drawers.	
Tucker & Dorsey, Indianapolis, Ind.	3
Anti-Friction Metals.	
Reeves Paul S., Philadelphia.	40
Anvils, Manufacturers of.	
Fisher & Norris, Trenton, N. J.	36
Richardson Mfg. Co., Worcester, Mass.	31
Angers, Bits, etc., Manufacturers of.	
Clark Wm. A., Westville, Conn.	11
Harlow C. C. & Co., Bridgeport, Mass.	26
Ives Wm. A. & Co., New Haven, Conn.	33
Jennings C. G. & Co., 58 Chambers, N. Y.	40
Axes, Edge Tools, &c., Manufacturers of.	
D. R. Barton Tool Co., Rochester, N. Y.	8
Jones M. H. & Co., Cohoes, N. Y.	24
Axes, Springs, &c., Manufacturers of.	
Brown J. & Co., Fisherville, N. H.	40
Cook R. & Sons, Winsted, Conn.	12
Hutchinson Guy C., Field & Co., Brooklyn, E. D.	35
Seldin & Co., Auburn, N. Y.	3
Wilson, Walker & Co., Pittsburgh, Pa.	5
Barn Door Hangers.	
Moore S. H. & E. J., Chicago, Ill.	25
Bed screws, Makers of.	
Shelton Co., Birmingham, Conn.	26
Bellevue, Manufacturers of.	
Bullock T. H., Chicago, Ill.	26
Newcomb Bros., 126 W. 14th, N. Y.	26
Scott Geo. M., Chicago, Ill.	26
Bells (Sleigh).	
Bever Bros. Mfg. Co., Easthampton, Conn.	32
Belling, Leather, Manufacturers of.	
Alexander, Leitch, Bridgeport, Conn.	37
Forepaugh Wm. F., Jr., & Bros., Philadelphia.	37
Bird Cages.	
Lindeman O., 245 Pearl, N. Y.	24
Maxheimer John, 247 and 249 Pearl, N. Y.	24
Bit Braces, Manufacturers of.	
Millers Falls Mfg. Co., 74 Chambers, N. Y.	25
Blocks, Tackle, Makers of.	
Burr & Co., 31 Mill, N. Y.	25
McMillan Wm. H. & Bro., 113 South, N. Y.	25
Penfield Block Works, Lockport, N. Y.	37
Providence Tool Co., Providence, R. I.	37
Bolt Cutters.	
Howard Iron Works, Buffalo, N. Y.	38
Stowell & Sons, Buffalo, N. Y.	38
Wiley & Russell, Greenfield, Mass.	38
Bolts, (Corrugated Bolt).	
Rivet Buckets Co., Chicago, Ill.	37
Bolts (Screw).	
Eagle Bolt Works, Philadelphia.	37
Boot and Shoe Heel Stiffeners.	
Lyons N., Albany, N. Y.	6
Borax.	
Coleman Wm. T. & Co., 180 Pearl, N. Y.	5
Brass Bars, Makers of.	
Tiebout W. J., 100 Pearl, N. Y.	26
Brass, Manufacturers of.	
Ansonia Brass and Copper Co., 19 Cliff, N. Y.	2
Bridgeport Brass Co., 100 Pearl, N. Y.	2
Brass Goods Mfg. Co., 100 Pearl, N. Y.	2
David John & Sons, 100 John, N. Y.	2
Holmes, Booth & Sons, 100 John, N. Y.	2
Manhattan Brass Co., 81 Reade, N. Y.	2
Plume & Atwood Mfg. Co., 81 Chambers, N. Y.	2
Scovill Mfg. Co., 400 N. Y.	2
Waterbury Brass Co., 256 Broadway, N. Y.	2
Brass Foundries.	
Reeves Paul S., Philadelphia.	40
Bridge Builders.	
Moseley Iron Bridge and Roof Co., 5 Day, N. Y.	4
Buck Saws.	
Boydton E. M., 80 Beekman, N. Y.	40
Butcher and Shoe Knives, Manufacturers of.	
Wilson John, 100 Pearl, N. Y.	33
Butts and Hinges.	
American Spiral Spring Butt Co., 80 Beekman, N. Y.	40
Sabin Mfg. Co., Montpelier, Vt.	40
Sample & Butts, 100 Pearl, N. Y.	40
Stanley Works, New Britain, Conn.	12
Union Mfg. Co., 98 Chambers, N. Y.	7
Calipers.	
Victor Sewing Machine Co., Middletown, Conn.	26
Carriage Bolts, Makers of.	
Townsend, Wilson & Hubbard, Philadelphia.	12
Carriage Hardware, Makers of.	
Hayden & Smith, Auburn, N. Y.	12
Smith H. D. & Co., Plantville, Conn.	12
Carriage Springs.	
Rome Trestle Co. (Limited), Rome, N. Y.	38
Car Axles.	
Robert A. P. & Co., 255 S. 4th, Philadelphia.	5
Casters.	
Tucker & Dorsey, Indianapolis, Ind.	36
Chains.	
Reiter & Morton, Pittsburgh, Pa.	9
Chisels, Manufacturers of.	
Buck Bros., Millbury, Mass.	32
Civil Engineers.	
Whitney S., Chattanooga, Tenn.	6
Clocks, Springs, &c.	
Cary & Moon, 25 W. 20th, N. Y.	3
Dunbar Bros., Bristol, Conn.	33
Clothes Pin, (Metallic).	
Brower J. L. & Son, 258 Greenwich, N. Y.	34
Coal, Miners.	
Pardee, A. & Co., 111 Broadway, N. Y.	3
Tennessee Coal & Railroad Co., Tracey city, Tenn.	6
The Hoboken Coal Co., Jersey City, N. J.	33
Coal Hods.	
Esterbrook, Wm., Philadelphia, Pa.	24
Pierce Geo. N. & Co., Buffalo, N. Y.	39
Coal Vases.	
Sidney Shepard & Co., Buffalo, N. Y.	31
Coffee and Spice Mills.	
Lane Brothers, Millbrook, N. Y.	39
Enterprise Mfg. Co., Philadelphia, Pa.	27
Companes and Dividers, Manufacturers of.	
Bemis & Call Hardw. & Tool Co., Springfield, Mass.	3
Coopers' Tools, &c., Dealers in.	
D. R. Barton Tool Co., Rochester, N. Y.	8
Little Chas. E., 59 Fulton, N. Y.	38
Copper.	
Pope, Cole & Co., Baltimore, Md.	2
The New Haven Copper Co., 255 Pearl, N. Y.	2
Cora Huskers.	
Chambers, Burling & Quinlan, Decatur, Ill.	32
Corrugated Iron.	
Moseley Iron Bridge and Roof Co., 5 Day, N. Y.	4
Crucibles, Manufacturers of.	
Wile, Sidel & Co., 77 Market, Phila.	35
Capoline & Blowers.	
Smith & Sayre Mfg. Co., 21 Cortlandt st., N. Y.	36
Curry Combs, Manufacturers of.	
Hackett D. & Co., Philadelphia, Pa.	35
Hutchinson Guy C., Field & Co., Brooklyn, E. D.	35
Lawrence Curry Comb Co., 382 2d av., N. Y.	26
Cutlery, Importers of.	
Baker Hermann & Co., 101 Duane, N. Y.	33
Catworthy F. & W., 8 Chambers, N. Y.	33
Fisher Jos. S., 411 Commerce, Phila.	11
Friedman & Leasing, 14 Warren, N. Y.	11
Cutlery, Manufacturers of.	
Burkshaw Aaron, Pepperell, Mass.	11
Goodell Company, Antrim, N. H.	11
Kraus & Hain, 100 Center, N. Y.	11
Meriden Cutlery Co., 49 Chambers, N. Y.	11
Naugatuck Cutlery Co., 59 Chambers, N. Y.	11
New York Knife Works, New York, N. Y.	11
The Frary Cutlery Co., Bridgeport, Conn.	11
The Lamson & Goodnow Mfg. Co., 88 Chambers, N. Y.	11
Differential Pulley Blocks.	
Yale Lock Mfg. Co., 43 Chambers, N. Y.	7
Dinner Pail & Lanterns.	
Haight, Jos. Forchester, N. Y.	24
Dismantling Tools.	
Jennings H. H., Deep River, Conn.	20
Door and Gate Springs.	
Dunne P. R., 185 Fulton, N. Y.	32
Van Wagoner & Williams, 80 Beekman, N. Y.	40
Door Stops and Holders.	
Spangler & Co., Pittsburgh, Pa.	37
Drill Chucks, Manufacturers of.	
Cushman A. F., Hartford, Conn.	36
Lambertville Iron Works, Lambertville, N. J.	36
Drilling Machines, Makers of.	
Hickford H., Cincinnati, O.	40
Thorne, De Haven & Co., Philadelphia.	37
Drop Forging.	
Wm. Wm. & Sons, West Philadelphia, Pa.	6
Drop Presses.	
Beecher & Pock, New Haven, Conn.	38
Edge Tools, Makers of.	
The D. R. Barton Tool Co., Rochester, N. Y.	8
Doscher M., 4 and 6 Gold, N. Y.	8
Elevators, Makers of.	
Crane Bros. Mfg. Co., Chicago, Ill.	9
Mason Volney W. & Co., Providence, R. I.	40
Stokes & Parrish, Philadelphia, Pa.	40
Elevator Buckets.	
Rivet Buckets Co., Chicago, Ill.	37
Rowland F. F., Brooklyn, N. Y.	38
Emery Wheels.	
Lehigh Valley Emery Wheel Co., Weissport, Pa.	40
Engineers, Manufacturers of.	
Southern States Coal, Iron Land Co., South Pittsburg, Tenn.	6
Todd Joseph C., 10 Barclay, N. Y.	6

<b>Engines, Caloric.</b>	
Brown Caloric Engine Co., 57 Lewis, N. Y.	36
<b>Engines (Locomotive).</b>	
Baldwin Locomotive Works, Philadelphia, Pa.	4
<b>Engines, Steam, Makers of.</b>	
Griffin Chas. W. & Co., Kensington, Phila.	38
Farquhar A. B., York, Pa.	38
Pittsburg Steam Engine Co., Pittsburgh, Mass.	38
Landis P. & A. B., Lehigh, N. J.	38
Lovegrove & Co., Philadelphia, Pa.	38
Pain & Wm. & Sons, Corning, N. Y.	7
Hapley & Wells, Binghamton, N. Y.	39
<b>Export Factors.</b>	
Jennings S. H., Deep River, Conn.	20
<b>Faucets, Brass, Makers of.</b>	
McNab & Harlin Mfg. Co., 50 John, N. Y.	36
<b>Faucets, Wood.</b>	
Penfield Block Works, Lockport, N. Y.	37
<b>Faucets, Self-Measuring, Makers of.</b>	
Enterprise Mfg. Co. of Pa., Phila. and N. Y.	27
<b>Feeling.</b>	
Crane & Chapuis, 31 & 33 Courtlandt, N. Y.	19
<b>Files, Importers of.</b>	
Carr & Riley, 82 John, N. Y.	11
Fisher Joseph S., 411 Commerce, Phila.	11
Moss F. W., 80 John, N. Y.	32
Sanderson Bros. & Co., 16 Cliff, N. Y.	32
<b>Files, Manufacturers of.</b>	
American File Co., Pawtucket, R. I.	40
Auburn File Works, 8 Chambers, N. Y.	8
Barnett G. & H., 41 and 43 Richmond, Phila.	8
Chalmers & Sons, Phila., N. Y.	8
Diaston Henry & Sons, Phila.	8
Draper C. T. & Co., Sing Sing, N. Y.	8
Everhart James & Son, Newark, N. J.	8
Heller & Bros., Newark, N. J.	8
Johnson & Bro., 1 Commercial, Newark, N. J.	8
McCauley R. & Co., 174 4th, Phila.	8
Nicholson File Co., Providence, R. I.	8
Paul Chas. B., Williamsburgh, N. Y.	8
<b>Fire Brick, Makers of.</b>	
Borgess & O'Brien, Philadelphia, Pa.	19
Brooklyn Clay Retort and Fire Brick Works, Van Dyke St., Brooklyn, N. Y.	19
Garner Brothers, Pittsburgh.	19
Hall A. & Sons, Perth Amboy, N. J.	19
Hall A. & Sons, Buffalo, N. Y.	19
Holmes & Co., Fisherville, N. H.	40
Kreischer B. & Sons, 80 George, N. Y.	19
Newton & Co., Albany, N. Y.	19
Strandberg James & Son, Troy, N. Y.	19
Valentine M. D. & Bro., Woodbridge, N. J.	19
Walton John R., Perth Amboy, N. J.	19
<b>Flint and Emery Paper and Cloth.</b>	
Reeder, Adams & Co., 739 Market, Phila.	40
<b>Flower Pot Stands.</b>	
Barnum E. T., Detroit, Mich.	25
<b>Fluting Irons.</b>	
Brooklyn Clay Retort and Fire Brick Works, Van Dyke St., Brooklyn, N. Y.	19
<b>Fluting Machine.</b>	
Shepard Hardware Co., Buffalo, N. Y.	31
The American Machine Co., Philadelphia.	12
Weeks A. & Co., N. Y.	12
<b>Fossiliferous Ores.</b>	
Brown T. J., Rockwood, Tenn.	6
<b>Foundry Facings.</b>	
Paxson J. W. & Co., 114 Beach, Phila.	5
Whitchee Bros., 117 W. 13th, N. Y.	5
<b>Friction Clutch.</b>	
Smith James & Co., 137 Market, Philadelphia.	13
<b>Furnaces, Makers of.</b>	
Richmond & Potts, 119 S. Fourth, Phila., Pa.	5
<b>Furniture Springs.</b>	
Carey & Moon, 234 W. 25th, N. Y.	2
Haigh Lloyd J., 81 John, N. Y.	2
<b>Galvanized Iron.</b>	
Loftis Marshall, Jr., 90 Beekman, N. Y.	4
<b>Grindstones.</b>	
Wilson & Hughes Stone Co., Cleveland, O.	33
Wood H. S. & Co., 32 West, N. Y.	33
Wood Walker R. & Co., 32 West, N. Y.	33
Worthington & Sons, North Amherst, O.	33
<b>Guns, &amp;c.</b>	
Winchester Louis & Roelker, 20 Reade, N. Y.	20
<b>Gunpowder, Makers of.</b>	
Kneeland F. L. (Dupont), 70 Wall, N. Y.	32
Latini & Rand Powder Co., 26 Murray, N. Y.	32
<b>Hardware Commission Merchants.</b>	
Grisham & Faint, 100 Pearl, N. Y.	18
Samuel S. L., 50 Cedar, N. Y.	18
Tennis & Wilson, 80 Beekman, N. Y.	18
Walbridge G. B. & Co., 81 Reade, N. Y.	18
<b>Hardware Dealers.</b>	
Lloyd, Supple & Walton, 63 Market, Phila.	24
Shepard Sidney & Co., Buffalo, N. Y.	31
<b>Hardware Importers.</b>	
Baker Hermann & Co., 101 Duane, N. Y.	33
McCooy & Co., 134 and 136 Duane, N. Y.	11
Widemann & Co., 100 Pearl, N. Y.	11
<b>Hardware Manufacturers.</b>	
American Spiral Spring Butt Co., 80 Beekman, N. Y.	40
Clark & Co., Buffalo, N. Y.	34
Coulter, Flagler & Co., 73 Chambers, N. Y.	39
Cowles Hardware Co., Unionville, Conn.	39
Enterprise Mfg. Co., Phila.	27
Lloyd, Supple & Walton, 63 Market St., Phila., Pa.	24
Malby, Curtis & Co., 34 Reade, N. Y.	25
Miller's Falls Mfg. Co., 74 Chambers, N. Y.	25
R. Bliss Mfg. Co., Pawtucket, R. I.	25
Russell & Erwin Mfg. Co., New York	33
Shepard Hardware Co., Buffalo, N. Y.	31
Stearns Bros., New Britain, Conn.	12
Union Mfg. Co., 98 Chambers, N. Y.	7
Van Wagoner & Williams, 80 Beekman, N. Y.	40
<b>Hardware Specialties.</b>	
Shepard Sidney & Co., Buffalo, N. Y.	31
Spencer & Underhill, 94 Chambers, N. Y.	31
<b>Hardware (Wagon).</b>	
Cover E. J. & Co., Farmer Village, N. Y.	3
<b>Harness Snaps.</b>	
Cover Mfg. Co., Troy, N. Y.	3
<b>Hay Knives.</b>	
Holt Hiram & Co., East Wilton, Me.	6
<b>Hinges.</b>	
Lewis, Oliver & Phillips, Pittsburgh, Pa.	12
Stanley Works, New Britain, Conn.	12
<b>Hox Ringers.</b>	
Chambers, Burling & Quinlan, Decatur, Ill.	32
<b>Holding Engines, Makers of.</b>	
Crane Bros. Mfg. Co., Chicago, Ill.	9
Mundy J. S., Newark, N. J.	38
<b>Holding Machines.</b>	
Harrison Edwin & Son, Philadelphia, Pa.	20
Mason Volney W. & Co., Providence, R. I.	40
<b>Hooks (Cotton &amp; Bale).</b>	
New York Handle & Mallet Works, 456 E. Houston.	34
<b>Horse Nails, Makers of.</b>	
Anvil Nail Co., 65 Washington, N. Y.	12
Ansonia Horse Nail Co., 14 Warren, N. Y.	8
Champion Steel Horse Nail Co., Appleton, Wis.	8
Globe Nail Co., Boston, Mass.	37
IP Horse Nail Co., Cleveland, O.	37
National Horse Nail Co., Vergennes, Vt.	37
Northwestern Horse Nail Co., Chicago, Ill.	37
Putnam Nail Co., Neponset, Mass.	37
Stetson N. Y., 72 Pearl, N. Y.	33
<b>Horse Shoes, Makers of.</b>	
Boston Rolling Mills, 17 Battery, Boston.	4
Burden Iron Works, Troy, N. Y.	4
Rhode Island Horse Shoe Co., Providence, R. I.	4
Schoenberger & Co., Pittsburgh, Pa.	4
<b>Hydraulic Jacks.</b>	
McLean John, 30 Monroe, N. Y.	35
<b>Hydraulic Jaws.</b>	
Dudgeon Richard, 24 Columbia, N. Y.	34
<b>Insurance, Boiler.</b>	
Hartford Steam Boiler Inspection & Insurance Co.	39
<b>Iron Brokers.</b>	
Boydton E. M., 80 Beekman, N. Y.	40
Etting Edward J., Philadelphia, Pa.	4
Hatry A. G., Pittsburgh, Pa.	4
Hasard T. D., 24 Pearl, N. Y.	4
<b>Iron, Charcoal, Warm or Cold Blast.</b>	
Quincy John W., 98 William, N. Y.	4
<b>Iron Commission Merchants.</b>	
Adam Hugh W., 56 Pine, N. Y.	6
Lowe S. B., Chattanooga, Tenn.	6
Spooner & Collins, St. Louis, Mo.	6
<b>Iron, Pig, Importers of.</b>	
Williamson James & Co., 69 Wall, N. Y.	4
<b>Iron Dealers.</b>	
Abel Brothers, 100 South, N. Y.	4
Bonnell, Rotford & Co., Youngstown, O.	4
Borden & Lovell, 70 and 71 West, N. Y.	4
Carmichael W. J., 130 and 132 Cedar, N. Y.	4
Conney Daniel F., 88 Washington, N. Y.	4
Huerfano G. & Co., 90 S. Greenwich, N. Y.	4
Fuller, Brothers & Co., 139 Greenwich, N. Y.	4
Harrison & Gillson, 450 50 52 Water, N. Y.	4
H. H. Jackson & Co., 20 West, N. Y.	4
Judson B. F., 457 and 459 Water, N. Y.	4
Kane C., Pittsburgh, Pa.	4
Landberg Gustaf, 87, 89 and 91 Elm, Boston, Mass.	4
Ogden & Wallace, 87, 89 and 91 Elm, N. Y.	4
Pierson & Co., 24 Broadway, N. Y.	4
Fullmann J. Wesley, Philadelphia, Pa.	4
Quincy John W., 98 William, N. Y.	4
Richards D. W. & Co., 92 Mangin, N. Y.	4
Wallace Wm. H. & Co., Albany and Washington	4
Warner A. B. & Sons, 26 and 28 West, N. Y.	4
Williamson James & Co., 69 Wall, N. Y.	4
Whitney A. R. & Bro., 58 Hudson, N. Y.	4
<b>Iron, (Manufacturers Agents).</b>	
Levis & Kimball, Philadelphia, Pa.	5
<b>Iron, Manufacturers of.</b>	
Boston Rolling Mills, 17 Battery, Boston.	5
Bradley, Reis & Co., 22 Cliff, N. Y.	5
Burden Iron Works, Troy, N. Y.	5
Collins H. E. & Co., Pittsburgh, Pa.	5
Houdlette & Ellis, Boston, Mass.	5
Kirkpatrick, Beale & Co., Pittsburgh, Pa.	5
Leonard John, 450 and 451 West, N. Y.	5
Oxford Iron Co., 81 Washington, N. Y.	5
Phoenix Iron Co., 40 Walnut, Philadelphia.	5
Roane Iron Co., Chattanooga, Tenn.	5
Rowland James & Co., 92 S. Delaware, Phila.	5
Rowland Wm. & Co., 92 S. Delaware, Phila.	5
Schoenberger & Co., Pittsburgh, Pa.	5
Stetson N. Y., 72 Pearl, N. Y.	5
The Passaic Rolling Mill Co., Passaic, N. J.	5
Vulcan Iron and Nail Works, Chattanooga, Tenn.	5
Wagon Car and Foundry Co., Chattanooga, Tenn.	5
Zug & Co., Pittsburgh, Pa.	5



# RIEHLE BROS.' STANDARD SCALES AND TESTING MACHINES



New Style  
Warehouse  
Scales.  
—  
Iron Tops.

Riehle Bros.' Machines for testing Band Iron, Wire, and all other materials, by tensile, transverse, and crushing strains, from 100 lbs. to 500 tons capacity. New Machine for testing lubricants. Scales for Railroads, Elevators and Wharves. Scales for Furnaces, Rolling Mills, Mines, &c. Testing Machines adopted by U. S. Government. Specimens of materials tested daily at the Works. Trucks for Depots, Warehouses, etc. Highest Centennial Award. Office & Works, 4th St., above Master, Philadelphia. Warehouses, 20 & 22 S. 4th St., Philadelphia. New York Office, 51 Liberty St.



TRADE MARK.  
The Atlantic White Lead and Linseed Oil Co.,  
MANUFACTURERS OF  
White Lead (Atlantic), Red Lead,  
Litharge & Linseed Oil.  
ROBERT COLGATE & CO.,  
287 Pearl Street, New York.

John T. Lewis & Bros.,  
No. 231 South Front St.,  
PHILADELPHIA.



TRADE MARK.  
MANUFACTURERS OF  
Pure White Lead, Red Lead, Litharge,  
Orange Mineral, Linseed Oil,  
AND PAINTERS' COLORS.  
JOHN JEWETT & SONS,  
Manufacturers of the well-known brand of  
WHITE LEAD.



TRADE MARK.  
ALSO MANUFACTURERS OF  
LINSEED OIL.  
182 Front Street, NEW YORK  
Brooklyn White Lead Co.



TRADE MARK.  
White Lead, Red Lead & Litharge.  
89 Maiden Lane, NEW YORK.  
FISHER MOWE, TREASURER

# DUC'S IMPROVED ELEVATOR BUCKET.



THE STORE-HOUSE BUCKET.  
(Partial straight front.)  
In 12 in., 14 in., 16 in. and 17 in. Sizes.

Made of Best Charcoal Stamping Iron.

No Corners to Catch.

Requires Less Power.

The only Scientifically Constructed Elevator Bucket  
in the Market.

T. F. ROWLAND,

Sole Manufacturer,

CONTINENTAL WORKS, Brooklyn, E. D., N. Y.



THE  
MILL BUCKET.  
In 3 1/2 in. to 10 in.  
Sizes.

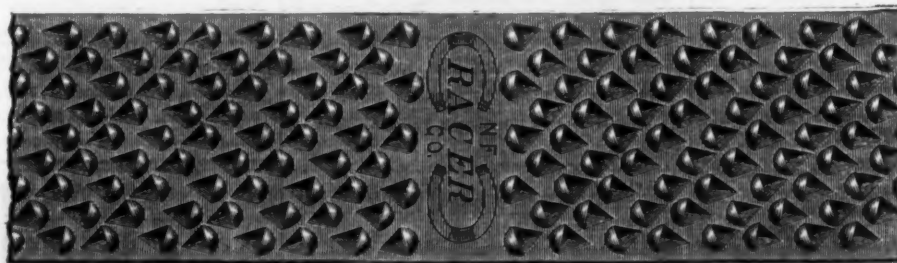
# NICHOLSON FILE CO., Manufacturers of FILES AND RASPS.

## Filers' Tools & Specialties.

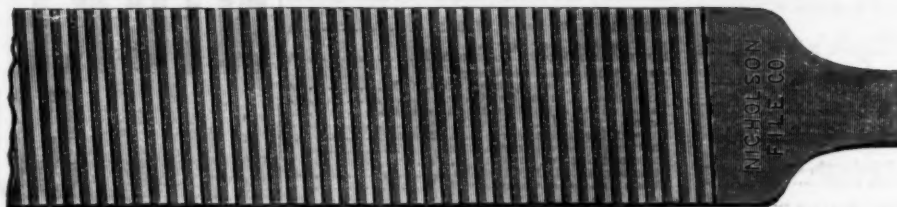
Manufactory and Offices at Providence, R. I.

The following space will be used in illustrating our specialties, the matter being changed weekly.

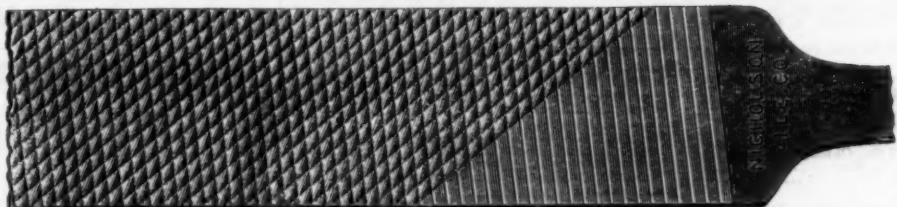
### IMPROVED HORSE RASPS.



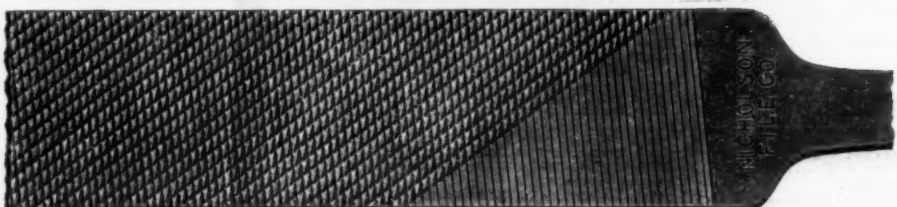
LEAD FLQAT.



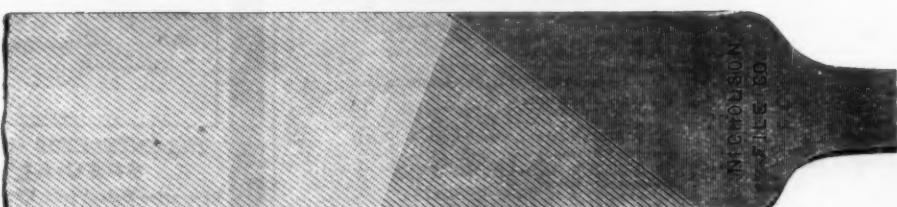
BRASS COARSE.



BRASS BASTARD.



FINISHING 2d CUT.



# MANUFACTURERS' SUPPLIES.

The Best and Lowest Price.

H. A. ROGERS, 19 John Street, New York.

A few doors from Broadway.

Steam Gauges, Belting, Chucks, Drills, Packing, Governors, Jacks, Oil Cups.

STEAM PUMPS for Pumping, Fire Purposes and Boiler Feeding.

Also VALVES, PIPING and VISES.

The Largest Stock in the City.



Where the BUCKEYE FORCE PUMP has been introduced it is preferred above all others, because it works easy, throws a constant stream, and is simple, durable and clean. Send for circulars, prices and terms to



MAST, FOOS & CO., Springfield, Ohio,  
Manufacturers.

# JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.



We invite attention to the superior construction of this chuck. Its working parts are absolutely protected from dirt and chips. It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address.

Lambertville Iron Works, Lambertville, N. J.

# PERRY & CO.'S STEEL PENS.



A sample card containing our leading styles is mailed on receipt of 5c.

IVISON, BLAKEMAN, TAYLOR & CO., Sole Agents for the U. S.

135 and 140 Grand St., New York.

PERRY & CO., Ld., London.

119 & 114 William St., New York.

# PHILADELPHIA HYDRAULIC WORKS,

Evellina and Levant Sts.,

General Machinists

and Manufacturers of

Steam Pumps and Steam Fire Engines.

Manufactured by

STEAM Crane Bros.,

PUMPS Mfg. Co.

CHICAGO.

# "DRAW CUT" BUTCHERS' MACHINES.

Choppers, Hand and Power.

Stuffers, Lard Presses.

Warranted thoroughly made and the BEST IN USE.

MURRAY IRON WORK

Burlington, Iowa

# STEAM ENGINES,

A. B. FARQUHAR, York, Pa.

Cheapest and best for all purposes—simple, strong, and durable. Also Traction Engines for common roads.

Saw, Grind and Rice Mills, Grist, Presses and Machinery generally. Inquiries promptly answered.

Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 is ready for road.

Fig. 1. Fig. 2.

The Farquhar Separator

(Warranted)

Patent Separator

Works, York, Pa.

Lightest draft, most durable, simplest, most economical and perfect in use. Write for circulars, prices and terms.

Send for Illustrated Catalogue.

Address A. B. Farquhar, York, Pa.

# Patent Portable Hoisting Machines

PRICE LIST.

To Lift	To Raise	Price.	Ex. Ft.
8 ft.	500 lb.	\$22 50	\$1 00
8	1,000	25 00	1 20
8	2,000	30 00	1 50
8	3,000	40 00	2 00
9	4,000	60 00	2 00
10	5,000	75 00	2 20
10	6,000	85 00	2 40
12	12,000	150 00	3 75
12	15,000	225 00	4 75
12	20,000	300 00	6 00

EDWIN HARRINGTON & SON,

Also Manufacturers of Machinery Tools.

15th St. and Pennsylvania Ave.,

PHILADELPHIA.





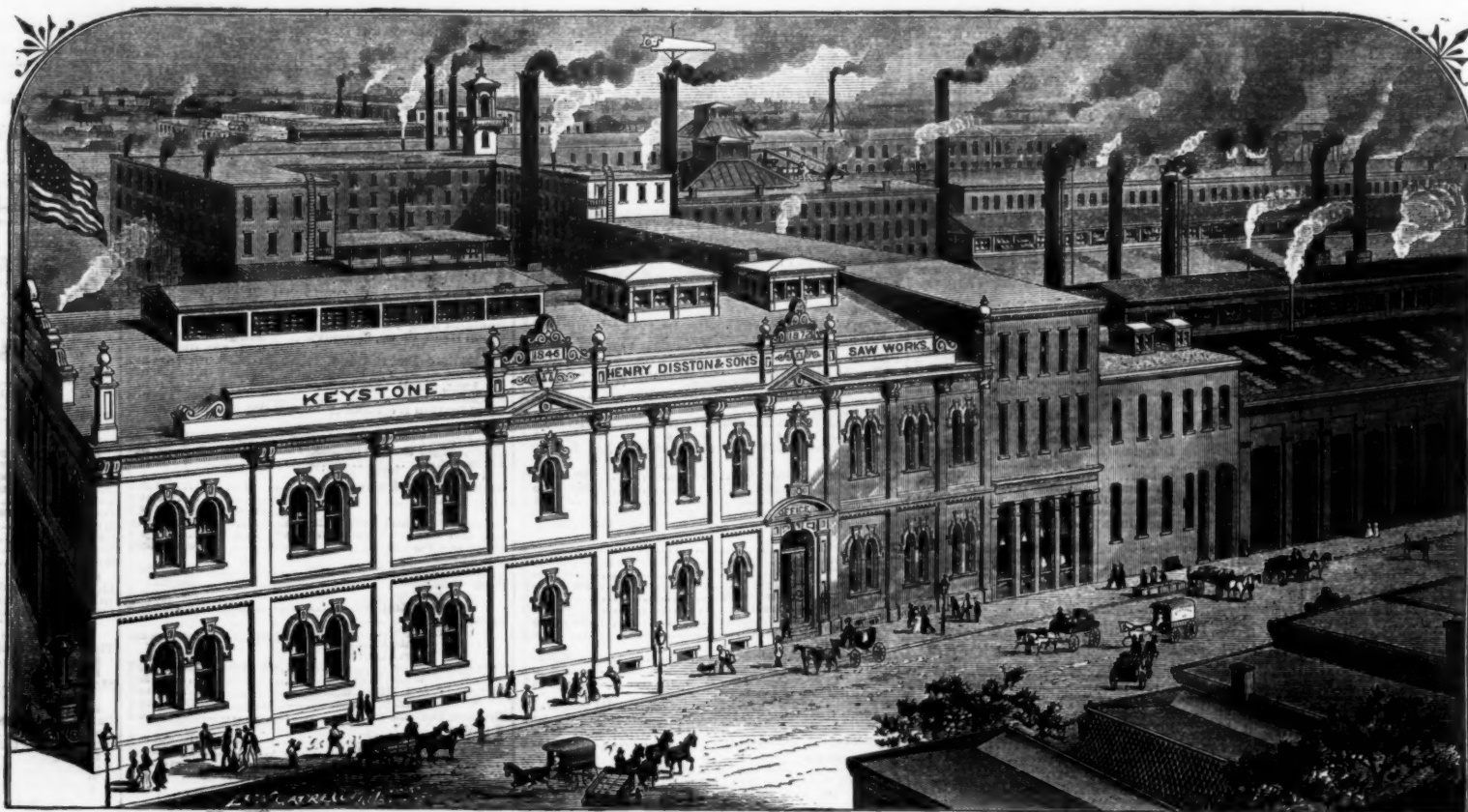
# Henry Disston & Sons,



**KEYSTONE SAW, TOOL, STEEL AND FILE WORKS,**  
**Front and Laurel Streets, Philadelphia.**

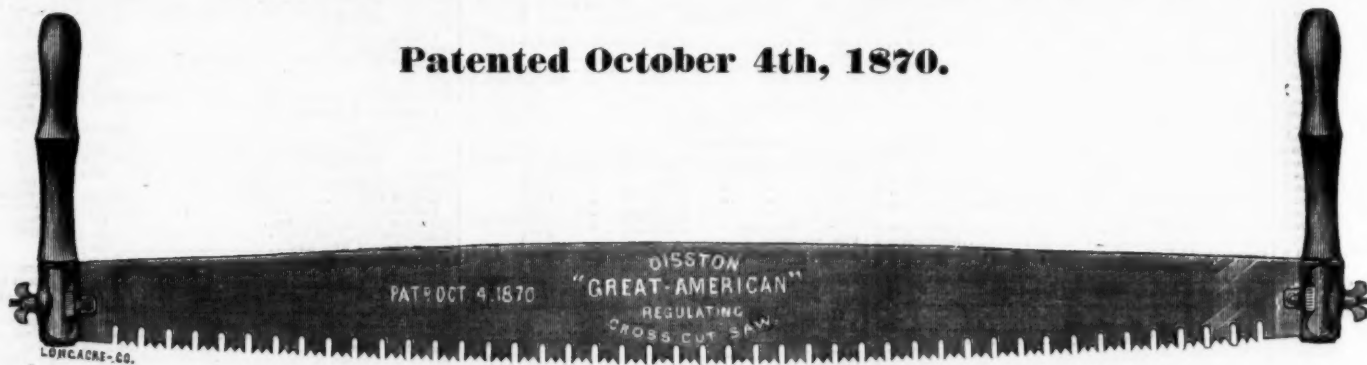
Branch Works, Tacony, Philadelphia.

Branch House, Randolph & Market Streets, Chicago, Ill.



## GREAT AMERICAN CROSS-CUT SAW.

Patented October 4th, 1870.



Particular care is taken in the manufacture of these Saws. They are made of the finest quality of steel, of uniform and high temper, ground gradually tapering from the teeth to the back, and are set and sharpened in the most perfect manner. Each Saw is highly finished and nicely etched, and guaranteed in every respect. The demand for this Saw has been and is constantly increasing, the number sold in the last year reaching over fourteen thousand.

The above cut also represents our Improved Patented Cross-Cut Handles attached to the Saw.

## GREAT AMERICAN ONE-MAN CROSS-CUT SAW.



This saw is manufactured under the same patent, and is as highly finished and fully warranted as the regular Great American Cross-cut Saw, but is ground on the same principle as our extra quality hand saws.

We have lately improved the Files for keeping the teeth of the Great American Saws in order. Parties ordering Saws would find it to their benefit to order a few of these Files, for it is almost impossible to get the teeth out of order if the Great American File is used.



**Oakum.**  
U. S. Navy. . . . . \$ 8  
**Oil.**  
Oilers, Zinc and Tin. . . . . \$ 10  
Brass and Copper. . . . . do 10  
Aluminum. . . . . do 10  
Broughton. . . . . do 10  
Malleable (Hammer's). . . . . \$ 10  
Pump's Patent. . . . . do 10  
**Ox Halls.**  
**Penicils.**  
Faber's Carpenters. . . . . do 10  
Dixon's Lead. . . . . \$ 10  
Lumber. . . . . \$ 10  
**Pictorial Boxes and Cases.**  
Brass Head, Sargent's List. . . . . do 10  
T. & S. Mfg. Co. . . . . do 10  
Porcelain Head. . . . . do 10  
Judd's List. . . . . do 10  
Porcelain Head, T. & S. Mfg. Co. . . . . do 10  
**Planing Machines.**  
Magic. . . . . \$ 10  
Hunsdon & Bond. . . . . do 10  
Crown Planing Machines. . . . . do 10  
Planers and Plane Irons.  
Bench, First Quality. . . . . do 10  
Second. . . . . do 10  
Moulding. . . . . do 10  
Bailey's Patent Adjustable, new list Jan. '77. . . . . do 10  
Bailey's "Victor". . . . . do 10  
Buck & Co. . . . . do 10  
D. R. Barton Tool Co. . . . . do 10  
Plane Irons, Butcher's. . . . . do 10  
Bailey's Patent. . . . . do 10  
Burnum Tool Co. . . . . do 10  
Defiance. . . . . do 10  
D. R. Barton Tool Co. . . . . do 10  
Middletown Tool Co. . . . . do 10  
Ohio Tool Co. . . . . do 10  
Spear & Jackson's. . . . . do 10  
Sawdust Tool Co. . . . . do 10  
**Pliers and Wire Irons.**  
Butler's Patent. . . . . do 10  
Hull's Patent Nippers, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 70



Asphaltum.....	Sundries.				
Bentine.....					gal, 50
Chalk.....					50
" Block.....					50
Dryer, Patent, Am'n.....	saw's cans, 10x60; keg,				410
Fronting.....					50
Glué, White.....					33 @ 410
" Sheet.....					250
Glass, White.....					30
Oum, Copal.....					100
Damar.....					300
" Shellac, English.....					30
" " " dark.....					300
Litharge, English.....					pc gold
Mineral Wool.....					# B 14 @ 150
Pumice Stone, selected Lump.....					4 @ 00
Putty, in ladders.....					250
" " bulk.....					20
Rotten Stone, soft, English.....					80
Spirits Turpentine.....					300
Whiting Spanish.....					900

**Glasses.**  
Prices current per box of 50 feet.  
**Single Thick.—discount 60c & 5**

SIZES.	1st.	2d.	3d.	4th.
0 X 8 to 10 X 15.....	\$ 7.50	\$ 6.75	\$ 6.25	\$ 5.75
11 X 14 to 16 X 24.....	8.50	7.75	7.25	6.50
13 X 22 to 20 X 30.....	10.75	9.75	8.75	7.75
15 X 30 to 24 X 30.....	12.25	10.75	9.00	
20 X 30 to 24 X 30.....	13.00	11.50	9.75	
25 X 37 to 26 X 44.....	14.50	13.25	10.75	
26 X 46 to 30 X 50.....	15.00	14.00	11.25	
30 X 52 to 30 X 54.....	15.75	14.50	12.00	
30 X 50 to 34 X 60.....	17.25	16.50	13.50	
34 X 58 to 34 X 60.....	18.25	17.25	15.00	
30 X 60 to 40 X 60.....	20.75	18.75	17.25	

**Double Thick.—Discount 70c & 5**

SIZES.	1st.	2d.	3d.	4th.
6 X 8 to 10 X 15.....	\$12.00	\$11.00	\$10.00	\$ 9.75
11 X 14 to 16 X 24.....	13.75	12.50	11.75	10.50
13 X 22 to 20 X 30.....	17.25	15.75	14.00	
15 X 30 to 24 X 30.....	19.75	17.25	14.50	
20 X 30 to 24 X 30.....	21.00	18.50	15.75	
25 X 37 to 26 X 44.....	23.50	21.25	17.25	
26 X 46 to 30 X 50.....	24.00	22.50	18.00	
30 X 52 to 30 X 54.....	25.75	23.25	19.50	
30 X 50 to 34 X 60.....	27.25	25.00	21.75	
34 X 58 to 34 X 60.....	29.25	27.75	24.00	
30 X 60 to 40 X 60.....	32.25	30.00	27.75	

Sizes above 40 X 60—\$10.00 per box extra for every five inches.  
An additional ten cent. will be charged for a glass more than 40 inches wide. All sizes above 33 inches in length, and not making more than 8½ units, will be charged in the 8 unit inches or less.

---

## Hand & Power Saws, Drills, Etc.

---

### PLATE SHEARS,

No. 5 will cut 7-16 Iron  
through center of sheet.

Manufactured only by

## G. B. Walbridge & Co

**83 Reade St.,  
NEW YORK.**

---



## E. E. SOUTHER & BRO.,

**St. Louis, Mo.,**

**AGENTS.**

---

## LEOPARD & CO.,

Manufacturers of  
**STAMPING WORKS.**



TRADE MARK.

TURBINE OF

## PANNED TIN WARE.

Fire Shovels, Spoons, Toilet Ware, Tin  
Beds, Iron Clad and Double Rim  
Ice Cream Freezers, "Bankers,"  
"Lazing" Transportation Cans,  
Grocers', Drugists' and  
Fruit Tins Ware.

House Furnishing Hardware.

**Leopard & Co., Buffalo, N. Y.**

Numbers St., N. Y.

---

The "**Monroe**" Patent Combined

## GLOSSING AND FLUTING IRON.

With Brass or Nickel Flutes. Prices furnished upon application.



**BURGER & BAUMCARD, Sole Agent**  
98 Duane St., New York

## SUPPLIES

FOR

Railways, Machinists and Amateurs,  
Gun and Leather Belting, Packings and Cartron  
Waste, Rabbit Metal.

**FINE TOOLS**

for Machinists and Amateurs: Barnes' Foot Power  
Scroll Saw; Foot Lathes all kinds. Sole Agents  
Ratter Steam Engine, Iron and Wood Working  
Machinery. Send for Price Lists.

**JACKSON & TYLER,**  
16 German St., Baltimore, Md.







**Steel.**  
**THE EDGAR THOMSON STEEL CO.,**  
**LIMITED.**  
MANUFACTURERS OF



General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.

New York Office, 57 Broadway.

The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managers officers are experienced in the manufacture of Bessemer Steel.

The Company warrants its rails equal in quality to any manufactured in the United States.

Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

Branch Office and P. O. Address, **No. 48 Fifth Ave., Pittsburgh, Pa.**  
**D. McCANDLESS,** Chairman. **WM. P. SHINN,** General Manager.

**JOHN WILSON'S CELEBRATED**  
**BUTCHERS' KNIVES,**  
**BUTCHERS' STEELS,**  
**AND**  
**SHOE KNIVES.**



THE TRADE MARK, IN ADDITION  
TO THE NAME,  
IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY  
**JOHN WILSON.**

GRANTED A.D. 1766, BY THE  
CORPORATION OF CUTLERS OF SHEFFIELD,  
AND PROTECTED BY ACT OF PARLIAMENT.

BUYERS ARE SPECIALLY CAUTIONED AGAINST  
IMITATIONS OF THE MARK, AND THE  
SUBSTITUTION OF COUNTERFEITS  
BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

**HERMANN BOKER & CO.,**

OFFICES AND WAREHOUSES:

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.

REMSCHIED and SOLINGEN (Prussia.) H. BOKER & CO.

SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ARTHUR LEE.

LIEGE (Belgium), Represented by Mr. LOUIS MULLER.

Manufacturers and Importers of Cutlery, Guns, Hardware and Railroad Material.

Proprietors of TRENTON VISE AND TOOL WORKS, Trenton, N. J.—Vises, Picks,

Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.

Proprietors of the MANHATTAN CUTLERY CO., "O. K." Razors.

LANSON & GOODNOW MFG. CO., Shelburne Falls, Mass.—Table Cutlery and Butcher

Knives.

Sole Agents for R. Heinisch Sons' Celebrated Tailors' Shears, Trimmers, Scissors,

&c., both Japanned and Nickel Plated.

Gardner's Pocket Knives, Trenton Anvils.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material,

Chains, Heavy Goods,

**Wheeler, Madden & Clemson**  
**MFG. CO.,**

MIDDLETOWN, . . . . NEW YORK.

Manufacturers of

WARRANTED CAST STEEL

**SAWS**

Of every description, including

Circular, Shingle, Cross-Cut, Mill, Hand,  
**WOOD SAWS, Etc., Etc.**

**Harvey W. Peace, Vulcan Saw Works.**

Manufacturer of every kind of

Patent Ground  
**SAWS.**



Circulars, Cross-Cuts, Mill  
Mule, Gang, Hand,  
and Butcher.

Molding and Planing Knives  
Plastering Trowels, Miter-  
ing Rods, &c.

Union Avenue, Tenth and Alameda Streets, BROOKLYN, E. D., N. Y.

**AMERICAN SAW CO.,**

Manufacturers of

Movable Toothed Circular Saws,  
**PERFORATED CROSS-CUT SAWS**  
And SOLID SAWS of all kinds. Trenton, N. J.



**Ludlow Valve Mfg. Co.,**

OFFICE AND WORKS:

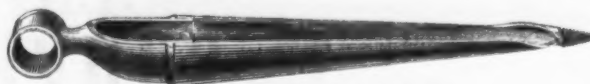
938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

**VALVES.**

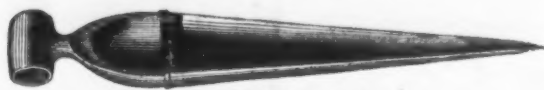
Double and Single Gate, 1/2 in. to 48 in.—outside and inside Screws, Indicator, &c.  
for Gas, Water and Steam. Send for Circular.

**Also FIRE HYDRANTS.**

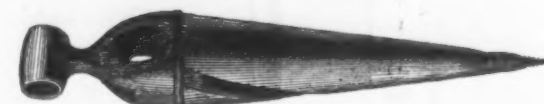
**WM. A. IVES & CO.,**  
New Haven, Conn.  
**IVES' PAT. TAP BORERS.**



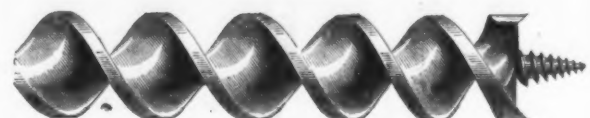
No. 1, Half Round, Scroll Point.



No. 2, Half Round.



No. 4, Volute.



Ives' Extra Cast-Steel Auger Bit.

(Old Style.)

It is believed to be in all respects the best and most perfect common bit ever made. Its use will demonstrate the fact. Its point shows a single, not a coarse, thread.

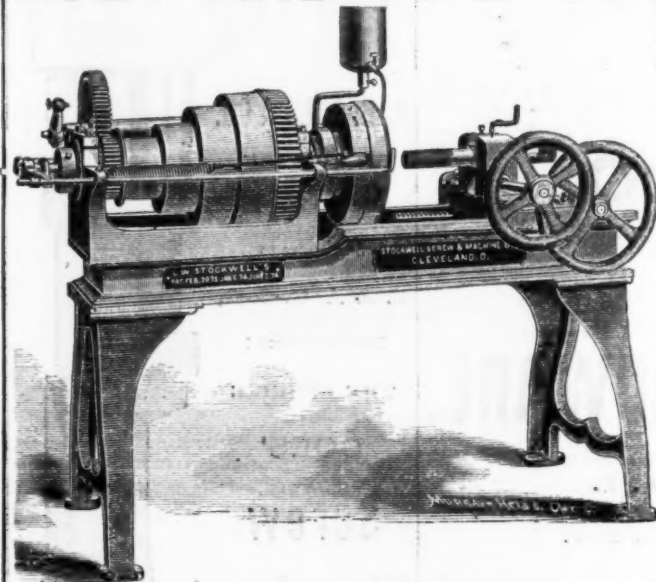
**OLD COLONY RIVET WORKS,**  
KINGSTON, MASS.,  
MANUFACTURERS OF

Rivets, Hand Iron Cutters, Punches, Shears, and Planing and Shaping Machines

Universal Ratchet Drills, and Patent Tinners' Snips.

New York Warehouse 116 Chambers Street.

**BOLT AND PIPE CUTTER.**



No. 1 cuts 1/4 to 1 inch.  
No. 2 " 3/8 to 1 1/2 "  
No. 3 " 1/2 to 2 "  
No. 4 " 3/4 to 3 "

Send for new illustrated catalogue.

Manufactured by the  
**STOCKWELL SCREW & MACHINE CO.,** Cleveland, O.

Fancy Brass Goods and Small Iron Castings  
**TO ORDER.**

**THE TURNER & SEYMOUR MFG. CO.,**

Manufacturers of Upholsterers' Goods, Shade Fixtures, Notions,  
House Furnishing and Fancy Hardware.

FACTORY, Woburnville, Conn. STORE, 81 Reade and 97 Chambers St., New York



**EUREKA**  
**Fruit Picker.**

The Best Article of the  
Kind ever Invented.

General Agents for HAYDEN & CO., Middletown, Conn.  
Manufacturers of Blind Trimmings.  
Van Sand's Screw Fastening, No. 2000.  
Van Sand's, old style, No. 3105.

**OLIVER'S PATENT**  
**Adjustable Bottom Metallic Flour and Meal Sieves.**



METALLIC SIEVE.—Complete.

Please to note the advantages the above useful improvement possesses for domestic and all other purposes for which Sieves are used. One Rim answers for Sieve Bottoms of all meshes, to suit every purpose that a Sieve is needed for. Housekeepers prefer this neat and useful Sieve, Cullender and Strainer, all in one. Duplicate Bottoms of all meshes, in separate packages; or, if desired, two or more bottoms furnished to each rim at a small advance. One doz. Sieves packed in a case 13x13 in., 14 in. deep.

106 & 108 Beckman St., New York.

**D. K. MILLER LOCK CO.,**  
712 Cherry St., Philadelphia.

Greatly improved. Prices reduced. As now made it is the best and most economical Pad Lock for all uses extant. Appreciated by all who use them. For simplicity, compactness, durability, convenience and security it has no equal. Springs now made from the celebrated Phosphor Bronze. We make these Locks with Master Keys when so ordered. Largely used by the U. S. Government, Railroads, Corporations, etc., etc. Samples of 2 1/4 in. size sent per mail on receipt of one dollar.

**Emery, Grindstones, &c.**

**Walter R. Wood,**  
**GRINDSTONES.**

Berea, O., Nova Scotia, & other brands  
283 and 285 Front Street, New York.

**WORTHINGTON & SONS,**

North Amherst, Ohio.

Manufacturers of

Lake Huron Amherst  
and Berea

**GRINDSTONES.**

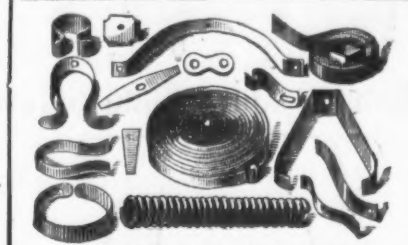
**H. S. WOOD & CO.,**

Manufacturers of  
Berea, O.  
Black River, O.  
Lake Huron, Mich.

Importers of  
New Castle, Eng.  
Wickersley, Eng.  
Nova Scotia.

**GRINDSTONES,**

33 West and 58 Washington Sts., N. Y.



**DUNBAR BROS.,**

Manufacturers of

Clock Springs and Small Springs  
of every description, from best Cast Steel.

BRISTOL, CONN.

A. HUGHES,  
Pres. & Treas.  
**Wilson & Hughes Stone Co.,**  
Quarriesmen.

**AMHERST BUILDING STONE,**

Buff and Light Drab Colors. Independence and Amherst Grindstones, for every variety of grinding. Ohio Fire-proof and Mineral Paints. Fire-proof Stove Putty. Orders promptly filled. CLEVELAND, O.

**Steam Oil Stone Works.**

**F. E. DISHMAN,**

Successor to Wm. Galbraith & Co.

Manufacturer of and Dealer in the Best

Washita, Arkansas, Hindostan and Sand

**STONES,**

Of all descriptions, and patterns, suited to every variety of Mechanical use. New Albany, Ind. Send for price list.

**BOYD & CHASE**

The largest manufacturers in the world of

**OIL STONE**

Of all description.

107th Street and Harlem River, NEW YORK.

Send for Illustrated Price List.

**"Bridgewater Iron Co.'s**  
**Horse Nails."**

LIST PRICE, Pointed and Polished.

No. 5 6 7 8 9 10  
26c. 23c. 21c. 20c. 19c. 18c. per lb.

Full Assortment of above always on hand

AND FOR SALE BY

**THE PARKER MILLS.**

N. STETSON JR., Agent,  
73 Pearl St., New York.

**Coal.**

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

**A. PARDEE & CO.**

303 Walnut St.,

PHILADELPHIA.

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

**Lehigh Coals.**

The following superior and well known Lehigh Coals are mined by ourselves and firms connected with us, viz.

A. Pardee & Co. { HAZLETON, CRANBERRY, SUGAR LOAF.

Pardee, Bro. & Co. LATTIMER

Calvin Pardee & Co. HOLLYWOOD.

Pardee, Sons & Co. Mt. PLEASANT.

**THE HOBOKEN COAL CO.,**

Dealers in

SCRANTON, LEHIGH and other COALS.

Retail Yard on D. L. & W. Railroad, cor. Grove and 19th Sts., Jersey City. Coal delivered direct from Shutes to Carts and Wagons. Families and manufacturers supplied with the best qualities of Coal at the lowest rates. Offices: At Yard cor. Grove and 19th Sts.; cor. Bay St. and Newark Ave., Jersey City; Room 25, 111 Broadway, N. Y. General Office, Bank Building, cor. Newark and Hudson Sts., Hoboken. F. O. Box 441, Hoboken.



**GRAHAM & HAINES,**

P. O. Box 1040. 113 Chambers and 95 Reade Streets, New York.  
**HARDWARE MANUFACTURERS' AGENTS, as follows:**

Lawrence Curry Comb Co.,  
 Curry Combs.  
 Howard Bros. & Co.,  
 Cotton, Wool and Curry Cards.  
 Thompson, Derby & Co.,  
 Seythe Snaths.  
 Otago Fork Mills,  
 Steel Forks, Rakes, Hoes, &c.  
 H. Knickerbocker,  
 Scythes, Axes and Tools.  
 H. W. Kipp, Nail Hammers.  
 Kroman, Park & Co., Vices,  
 Picks, Mattocks, Grub Hoes, &c.  
 Jacobus & Nimick Mfg. Co.,  
 Locks, &c.  
 Sandusky Tool Co.,  
 Planes and Plane Irons.  
 Geo. M. Eddy & Co.,  
 Measuring Tapes.

Wheeling Hinge Co.,  
 Hinges and Wrought Butts.  
 Northwestern Horse Nail Co.,  
 Horse Nails.  
 A. G. Coes & Co.,  
 Coes' Genuine Screw Wrenches.  
 F. K. Silby, Emery Cloth.  
 Hotchard & Co., Stocks and Dies.  
 Sedgwick Mfg. Co.,  
 Butter and Flour Triers, etc.  
 Ripley Mfg. Co., Mouse Traps.  
 Sam'l Loring,  
 Plymouth Tack & Rivet Works.  
 Carr, Crawley & Deelin,  
 Miscellaneous Hardware & Cast  
 Butts.  
 J. Mallinson,  
 Cast Steel Shears and Sissors.  
 Ketchum's Pat. Metallic Sieves.

W. D. Turner & Co.,  
 Geneva Hand Fluters.  
 D. B. Niles & Son,  
 Hand and Sleigh Belts.  
 C. S. Osborne & Co., Com-  
 passes, Callipers, Dividers, &c.  
 C. W. Maguire, Brushes.  
 Clark Bros. & Co.,  
 Carriage Bolts, &c.  
 Lowrey & Tucker, the Genu-  
 ine Knox Fluting Machine.  
 T. B. Barclay,  
 "Dodge's" Kentucky Cow Bells.  
 Lane Bros., Swift's and Gro-  
 cers' Coffee Mills and Measuring  
 Facets, &c.  
 T. C. Richards Hardware Co.,  
 Bright Wire Goods, Picture Nails,  
 &c.

**The Cowles Hardware Co.,**

UNIONVILLE, CONN., Manufacturers of

**HARDWARE AND HOUSE FURNISHING GOODS.**

**SPRING BUTTS**

FOR ALL SIZES OF DOORS, on a  
 New Principle, which places the power just where  
 it is most needed, viz.,

They exert their greatest force at closing point.  
 Act with less resistance the wider the door is opened. Will  
 not allow the door to open off from the top. Will retain the  
 door back of a right angle.  
 Butts of our make can be seen at the principal Hardware  
 Dealers in most of the larger cities of the States and Canada.

Mincing Knives and Screw Drivers of all varieties.



**HERCULES**  
 Reverse Action Door Spring and Retainer.  
 (Patented March 4, 1875.)

On an entirely new principle, distinct from all others.  
 Holds the door open as well as shut, and allows the door  
 to stand at a right angle without the aid of any catch.

AGENTS: WALSH, COULTER & FLAGLER, 87 Chambers St., New York; SAM'L  
 G. B. COOK & CO., Baltimore, Md.; BAILEY & RICHARDSON, St. Louis, Mo.  
 Send for circulars and discounts.

**CLARK & CO.,**

MANUFACTURERS OF

**BUILDERS' HARDWARE.**

426 & 428 Niagara Street,  
 BUFFALO, N. Y.

TENNIS & WILSON, Agents,  
 81 Beekman St., New York.  
 and for Catalogue and Price List.

**"FELTER'S PATENT LOCKS,"**

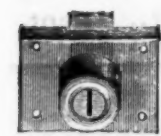
MANUFACTURED BY

**The American Lock Mfg. Co.,**

Are the most **SECURE** and **DURABLE** ever made.

**SECURE**  
 Because they have 40 Brass Tumblers, independent in their action, either one of which will prevent the  
 cock from being opened unless brought to proper position by the Key.

**DURABLE**  
 Because we use no Springs to break or get out of place.

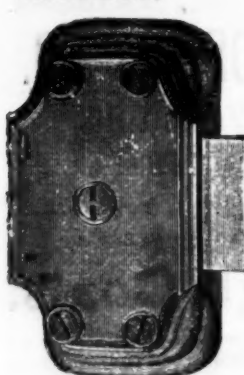


THEY HAVE  
**STERLING METAL KEYS**

That will not corrode or wear, and are  
 stronger than steel.



FULL SIZE OF KEY.



Upright Rim Dead Locks,  
 Horizontal Rim Night Latches,  
 Horizontal Rim Tubular Night Latches,  
 Mortise Night Latches, Plain Fronts,  
 Mortise Night Latches, Ornamental Bronze  
 Fronts and Knobs,  
 Brass Chest, Box, Cupboard and  
 Drawer Locks,  
 Solid Bronze Padlocks.

Illustrated Catalogue and  
 Price List sent on application.  
 All orders should be addressed  
 to

UNION NUT CO., General Agents, 99 Chambers St., N. Y.

**Mica and Porcelain Materials.**

**THE CHESTER MICA AND PORCELAIN CO.**

OFFER

Mica of the Best Quality,  
 Feldspar of highest Standard and Purity,  
 Quartz, the Finest, Whitest, Best.  
 Kaolin, Asbestos and Baryta.  
 Best Terms, Wholesale and Retail.

Address, CHESTER MICA AND PORCELAIN CO., 87 Liberty St. New York.

**KIMBALL'S PATENT.****"SOLID CAST STEEL"  
SHOVELS AND SPADES**

Are used with entire satisfaction by some of the leading

Railroad and Mining Companies

in this country, and largely exported to

AUSTRALIA, SOUTH AMERICA, WEST INDIES and other countries.

The Blades are forged from **Best Quality Solid Cast Steel** and riveted to **Malleable  
 Iron Straps**, which extend entirely across the blade, thus equalizing the strain. They have a **Con-  
 cave Back**, which strengthens the Shovel and facilitates its use in digging or spading, and will  
 wear longer than any other Shovel.

We claim they are the

**Strongest and Most Durable Shovels Made,**

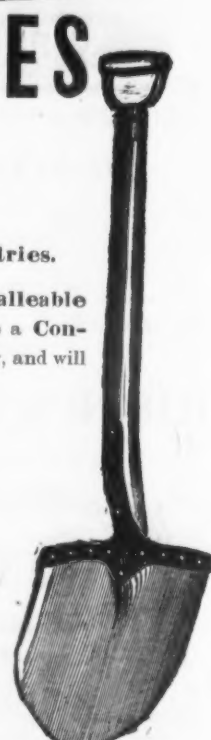
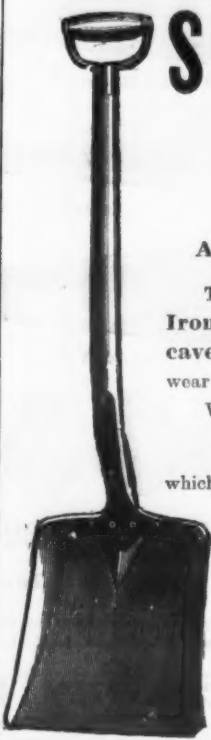
which claim is sustained by the large increase of our sales.

For Sale by all Hardware Dealers.

MANUFACTURED BY

**KIMBALL SHOVEL CO.,**

Baltimore, Md.



A. G. COES  
 PAT. DEC. 26, 1871

Established in 1839.

A. G. COES & CO.

WORCESTER,

MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

COES'

Screw  
 Wrenches.

PATENTED,

May 2, 1871.

December 26, 1871.

December 28, 1875.

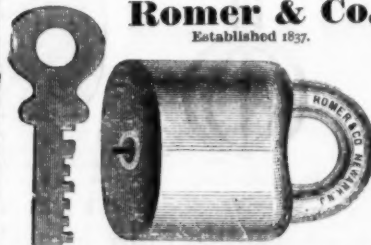
August 1, 1876.

The oak strain when the wrench is used is borne  
 by the bar—not by the handle.  
 The strongest Wrench made, and the only suc-  
 cessful Re-enforced Bar.  
 None genuine unless stamped

A. G. COES & CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St.,  
 New York, carry a full line of our goods, and will be  
 pleased to serve you at factory prices.

**Romer & Co.**  
 Established 1837.



Manufacturers of Patent Scandinavian or Jail  
 Locks, Brass Pad Locks for Railroads and Switches.  
 Also Patent Stationary R. R. Car Door Locks. Pat-  
 ent Piano and Sewing Machine Locks.  
 141 to 145 Railroad Avenue, NEWARK, N. J.  
 Illustrated Catalogue sent to the trade on appli-  
 cation.

**COBB & DREW,**  
 Plymouth, Mass.

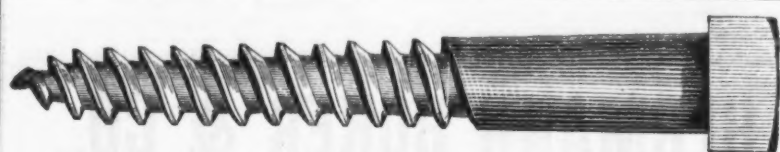
Manufacturers of Copper, Brass, and Iron Rivets: Com-  
 mon and Swedes Iron, Leathered, Carpet, Lace and Glass  
 Tacks: Flushing, Hungarian, Trunk, Closet and Curd  
 Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY

**George O. Grundy.**  
**HARDWARE.**

165 Greenwich Street.

Agents for the Philadelphia Star Carriage and Tire Bolts.



**WM. H. HASKELL & CO.**

Pawtucket, R. I.,

MANUFACTURERS OF

**COACH SCREWS**

(With Gimlet Points),

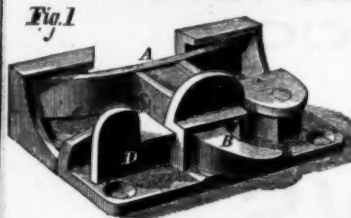
ALL KINDS OF

Machine and Plow Bolts,

FORGED SET SCREWS,

AND

TAP BOLTS.

**THE PERFECT SASH TIGHTENER AND LOCK.**

Manufactured entirely from Malleable  
 Iron, Burglar Proof, Anti-Battling,  
 Draws Sash to Exact Center. No  
 Springs to Get out of Order.

The Best in the Market.

**METALLIC CLOTHES PIN.**

For either Wire or Rope Line,  
 Will securely hold any article, from a silk handkerchief to a  
 carpet. No article can be blown away. Does not soil the cloth-  
 ing. Manufactured by

**CLARK & SMITH,** Patentees, Chester, Orange Co., N. Y.

SOLE AGENTS.

**J. I. BROWER & SON,**

286 Greenwich St., New York,

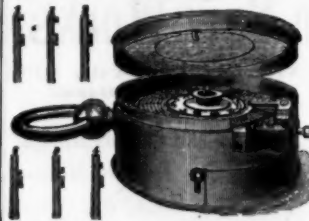
Who keep a general assortment on hand for the country trade. Jowett's Horse Raps, 14, 15  
 and 16 inch, Maharay's \$10 Tire Shrinker, Heller's Raps. Send for Circular.

SPECIAL DISCOUNTS TO JOBBERS.

**BUERK'S**

**Watchman's Time  
DETECTOR.**

IMPORTANT FOR ALL LARGE CORPORATIONS  
 AND MANUFACTURING CONCERNS.



Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the  
 same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable  
 as the best lever watch. It requires no fixture or wires communicating from room to room, as is the  
 case with the ordinary watch clocks. A small, inexpensive stationary key is alone required at each  
 station. The instrument will, in all cases, be warranted perfect and satisfactory.  
 N. B.—The suit against Imhaeuser & Co., of New York, was decided in my favor, June 10, 1874.  
 Another suit has been decided against them and a fine assessed Nov. 11, 1876, for selling contrary to the  
 order of the Court. Persons using clocks infringing on my Patent will be dealt with according to law.

**J. E. BUERK, Proprietor,**

P. O. Box 979.

No. 230 Washington Street, Boston.

In sending for circular or ordering the above, please mention this paper.

**N. Y. MALLET and HANDLE WORKS**



Manufacturers of  
 Calkers', Carpenters', Stone Cutters'  
 Tin, Copper and Boiler Makers'  
**MALLETS,**

Hawking Beets, Hawking and Calking Irons  
 also all kinds of Handles, Sledge, Chisel and Hammer.  
 Also

**COTTON AND RALE HOOKS.**  
 Patented Feb. 13, 1871; a new combination of Hooks.  
 456 E. Houston St., New York City.

**SPECIAL NOTICE.**

The undersigned, in view of the **Paris Ex-  
 hibition of 1878**, begs to inform his friends that  
 he continues to make translations of Catalogues,  
 Prices-current, Circulars, Correspondence, &c.,  
 from and into the  
**ENGLISH, FRENCH, GERMAN**

and **SPANISH**, and bestows special attention upon a  
 strictly correct rendering of **Technical Ex-  
 pressions** in matters relating to **Machinery,  
 Metallurgy, Hydraulics, &c.** The very best  
 reference will be furnished from leading manu-  
 facturers in this city, Philadelphia and elsewhere, for  
 whom he has translated. If desired, estimates  
 will be procured for the setting up, electrotyping  
 and printing of catalogues, &c., in the above lan-  
 guages.

**C. KACHHOFF,**  
 Metal Reporter of The Iron Age,  
 83 Reade St., New York.



**Pittsburgh, Pa.**

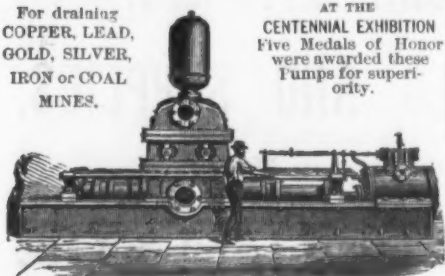


**VALLEY MACHINE CO.**  
**STEAM PUMP**  
 Manufacturers,  
 Easthampton, - Massachusetts.




**Knowles' Patent Improved Mining Pumps.**

For draining  
 COPPER, LEAD,  
 GOLD, SILVER,  
 IRON or COAL  
 MINES.



AT THE  
 CENTENNIAL EXHIBITION  
 Five Medals of Honor  
 were awarded these  
 Pumps for superi-  
 ority.

Arranged with Special Reference  
 to Working Water Contain-  
 ing Dirt, Gritty Matter  
 or Acid.

Pumps of capacity of over one million gal-  
 lons per day are now delivering water  
 through 600 feet vertical column, working  
 entirely without shock or jar, the entire  
 stoppages of Pump aggregating less than  
 twelve hours per year.

Knowles' Steam Pump Works,  
 93 & 94 Liberty St., New York.

**THE MACKENZIE PATENT  
 CUPOLA & BLOWER.**

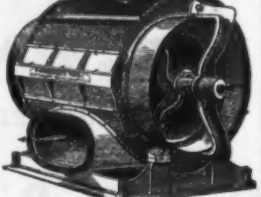
Send for circular to

**Smith & Sayre Mfg. Co.,**  
 PROPRIETORS, 21 Cortlandt St., New York.



This Cupola has made a great revolution in melting Iron. It differs from all others  
 in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all  
 points. Above one ton capacity per hour, they are made *cast in form*. This brings  
 the blast to the center of the furnace with the least resistance and smallest possible  
 amount of power, and in combination with the continuous Tuyere causes complete  
 diffusion of the air throughout the furnace, and uniform temperature, melting ten  
 or fifteen tons an hour with the pressure of blast required to melt two or three tons in  
 an ordinary Cupola. It also enables us to save very largely in time and fuel, the ex-  
 perience of our customers showing a gain of twenty-five to thirty per cent. in time, and  
 twenty-five to forty per cent. fuel over the ordi-  
 nary Cupola, and a BETTER QUALITY OF CASTING,  
 especially in light work. This is due to the  
 thorough diffusion of the air and more perfect  
 combustion, extracting less carbon from the  
 iron, making a softer and tougher casting.

We manufacture these Cupolas of any desired  
 capacity, numbered from 1 to 20, inclusive, the  
 numbers indicating the melting capacities in tons  
 per hour—No. 1, one ton; No. 2, two tons; No.  
 3, three tons per hour, and so on up to 20  
 tons. We have improved the construction of these  
 Cupolas in every way, have increased their  
 strength and durability, and sought to make  
 them as convenient for working and repairs as  
 our own, and the experience of our customers,  
 could suggest.



Israel H. Johnson, Jr. & Co.

TOOL & MACHINE WORKS.

Manufacturers of

Engine, Brass Finishers'

Wood Turners', Ama-  
 teurs' and Jewelers'

LATHES.

Slide Rest, Screw Machines,

Turner Heads, Screw Presses,

Screw Clamps, Lathe Carriers,  
 &c.

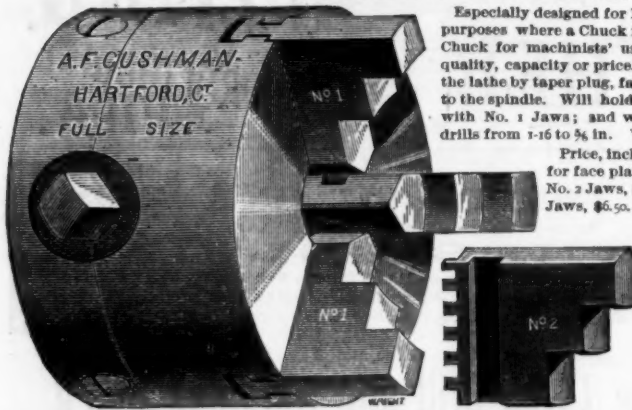
440 N. 12th St., above Noble,

Philadelphia, Pa.

Israel H. Johnson, Jr.

Joshua E. Johnson, Jr.

**THE AMATEUR CHUCKS.**



Especially designed for Foot Lathes and for all  
 purposes where a Chuck is used; and as a Drill  
 Chuck for machinists' use it has no superior in  
 quality, capacity or price. Is made to attach to  
 the lathe by taper plug, face plate, or to screw on  
 to the spindle. Will hold pieces 2 1/2 in. diameter  
 with No. 1 Jaws; and with No. 2 Jaws will hold  
 drills from 1-16 to 3/4 in. Warranted satisfactory.

Price, including Key and Screws for  
 face plate, with either No. 1 or  
 No. 2 Jaws, \$5.50. With two sets of  
 Jaws, \$6.50.

One sample sent by  
 mail free on receipt  
 of price.

Price to dealers fur-  
 nished on applica-  
 tion.

Address

A. F. Cushman,

HARTFORD, CONN.

Send for catalogue.

**HERMANN BOKER & CO.,**

101 and 103 Duane St., New York,

SOLE AGENTS FOR

**Peugeot Brothers'**

Patent Improved

**HORSE CLIPPERS.**



The cutting parts are made of the very best English Cast Steel. The  
 upper knife passes over two teeth. There is a protecting plate which  
 gives the Clipper great strength. The iron parts of the handles are all  
 wrought, not malleable, iron, and adjusted so that there is no danger  
 of the handles getting broken. Every Clipper is carefully examined be-  
 fore leaving the factory. Quick and easy working can be guaranteed.

**BROWN'S CALORIC ENGINE.**

Superior to any Hot Air Motor in Market.

Is the most perfect substitute for any other power. Its special merits  
 are: Simple construction and durability. The consumption of fuel is  
 about 3 1/2 pounds per horse-power and per working hour. Accidents of  
 explosive nature are impossible. No water tax. No extra insurance.  
 Replenishing the self-feeder does not cause any stoppage or slackening  
 of the power. These machines can be seen in sizes of 3 1/2, 7 and 14 horse  
 power, at the  
**BROWN CALORIC ENGINE CO., 57, 59 & 61 Lewis St., N. Y.**  
 Larger sizes per contract. Apply for illustrated price list.



**Aug. P. Brown's Safety Steam Engine Governor.**  
 Apply for circular.

**L. M. RUMSEY & CO.,**

SOLE OWNERS AND MANUFACTURERS OF

**Witherell's and Churchill's Patent  
 RUBBER BUCKETS, PUMP CHAIN  
 AND FIXTURES**

For Chain Pumps.

These Patents cover the use of the Rubber, the use of the Nut and Bolt for  
 expanding, the use of the Tube and Valve for draining. All others are in-  
 fringements, and manufacturers and dealers in infringing Buckets will be  
 prosecuted to the full extent of the law.

For Rubber Buckets, Chain Tubing, Curbs and Fixtures, address

**L. M. RUMSEY & CO., 811 North Main Street, St. Louis, Mo., U. S. A.**

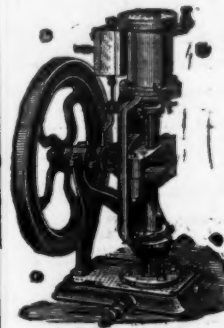
**THE EAGLE ANVIL!! WARRANTED!!**



(ESTABLISHED) 1843.

THESE GOODS ARE SOLD BY THE GENERAL AGENTS (with special discounts to the trades.)  
 New York.—Messrs. TENNIS & WILSON.—RUSSELL & ERWIN MFG. CO.—Messrs. HORACE DURIE & CO.,  
 Boston.—Messrs. GEORGE H. GRAY & DANFORTH. Philadelphia.—Messrs. JAMES C. HAND & CO. Baltimore.—Mr. W.  
 H. COLE Louisville.—Messrs. W. B. BELKNAP & CO. FISHER & NORRIS, Sole Manufacturers, Trenton, N. J.

These Anvils are superior to the best English, or other Anvils, on account of  
 the peculiar process of their manufacture (invented and used only by this concern)  
 and from the quality of the materials employed.  
 The best English Anvils become hollowing on the face by continued hammering  
 in use, on account of the fibrous nature of the wrought iron—causing it to "settle"  
 under the face.  
 The body of the Eagle Anvil is of crystallized iron, and no settling can ever  
 occur; the steel face, therefore, remains perfectly true. Also, it has the great ad-  
 vantage, that being of a more solid material, and consequently with less rebound,  
 the piece forged receives the full effect of the hammer, instead of a part of it being  
 wasted by the rebound, as of a wrought iron anvil. An equal amount of work can,  
 therefore, be done on this Anvil with a hammer one-fifth lighter than that required  
 when using a wrought iron anvil.  
 The working surface is in one piece of Bessemer's Best TOOL CAST STEEL, which,  
 being accurately ground, is hardened and given the proper temper for the heav-  
 iest work. The Anvil is covered with and its extremity made entirely of steel.  
 The body of the Anvil is of the strongest grade of American iron, to which the cast  
 steel face is warranted to be thoroughly welded and not to come off.  
 Price List, October 1-1, 1876. ANVILS weighing 100 lbs. o 800 lbs., 95. per lb.  
 Smaller Anvils, ("Minors")  
 No. 00 0 1 2 3 4 5 6 7 8 9  
 Weighing about 5 lb. 10 lb. 15 lb. 20 lb. 30 lb. 40 lb. 50 lb. 60 lb. 70 lb. 80 lb. 90 lb.  
 \$2.50 \$3.75 \$5.00 \$6.25 \$7.50 \$8.75 \$10.00 \$11.25 \$12.50 \$13.75 \$15.00  
 N. B.—These are the RETAIL PRICES. The only additional cost will be the freight to  
 the purchaser's place of residence.



**The Eclipse Steam Pump.**

(Patented May 17, 1878.)

A New, Cheap and Simple Boiler Feeder.

This differs from any Pump of its class by doing away with a sliding  
 box or strap, and supplying the places of the same by a hardened steel  
 roller and steel pin. By this construction a great amount of friction is  
 avoided. It is durable, handy and cheap. Anyone of ordinary intelligence  
 can successfully operate it. Prices range from \$45 upwards.  
 Send for circular.

**M. SHULTZ,**

No. 170 Plum Street, - CINCINNATI, OHIO.

**PEERLESS WRINGER CO.**

New York Office:  
 106 Chambers Street.

THE

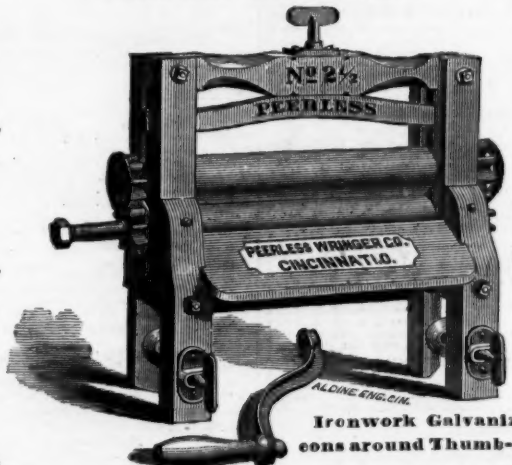
Factory:  
 Cincinnati, O.

**New and Improved Peerless Wringer,**

Which, in addition to the Highest Possible Finish, combines the following

POINTS OF EXCELLENCE:

Solid White  
 Rubber Rolls,  
 Metal  
 Journal Boxes,  
 Patent Crank  
 Fastening,  
 Rubber  
 Fastening Pads,  
 Maple Frames.  
 Strongest  
 Frame  
 Made.



Wrought Iron  
 Thumbscrews,  
 Apron or  
 Clothes Guide,  
 Hickory  
 Spring Bar,  
 Moulded  
 Rubber Springs.  
 Best and  
 Most Simple  
 Tub  
 Attachment.

Nothing can get out of order and be broken. Warranted double the capacity of any  
 Purchase Gear Wringer.

**GIVE US A TRIAL ORDER.**

Send for Catalogue of the



**FIRMENICH**

**Safety Steam Boiler.**

The Boiler that made the hottest, driest and  
 greatest quantity of Steam at the Centennial Ex-  
 hibition. Tubes never require cleaning or scraping.  
 Boilers in use for four years without getting dirty.

**J. C. & F. FIRMENICH,**  
 Office, 13 Mortimer Street, Buffalo, N. Y.



The trade deserves a good caster. Will be made  
 in 14 sizes. To carry from the tiniest chair to tons  
 of burden. Send for catalogue.

**TUCKER & DORSEY CASTER CO.,**  
 Indianapolis, Ind.

**Domestic Semi-Portable Engine.**

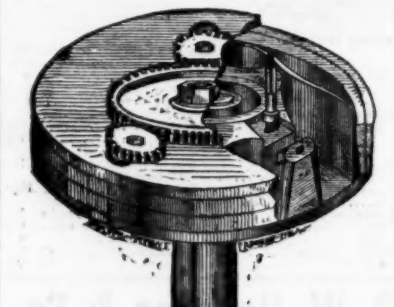
2 and 4 horse-power, and  
 THE

**PEERLESS  
 Portable Steam  
 Engine**

for Agricultural and other  
 purposes, from 6 to 10 horse  
 power.

Nothing cheap but the  
 price. See for descriptive  
 catalogue and price list to

**F. F. & A. B. LANDIS, M'rs.,**  
 Cherry Street, Lancaster, Pa.



**WM. SPRAGUE & CO.,**

Manufacturers of

**SPRAGUE'S IMPROVED  
 Steam Engine Piston.**

The rings are expanded without removing the cylin-  
 der head. Guaranteed to save 10 per cent. over any  
 now in use. Special attention given to repairing, im-  
 proving, &c. Send for circular and price list.

638 and 630 Filbert St., Philadelphia.

**PATENT MINERAL WOOL.**

Entirely Fire Proof, Undercaying,  
 and the Best Non-Conductor  
 of Heat, Cold and Sound.

Used extensively for lining steam pipes and  
 boilers, underground and open air pipes, water  
 tanks, refrigerators, cold storage houses, roofs  
 and walls of dwellings, drying kilns, deadening  
 floors of railway passenger cars, &c.

**ALEXANDER D. ELBERS,**  
 No. 26 1/2 Broadway, New York.  
 Address P. O. Box 4461.

**TACKLE BLOCKS.**

Rope and Iron Strap of all kinds. Lig-  
 num vitae Wood for Ten-Pin Balls.

**Wm. H. McMillan & Bro.,**  
 Office, 113 South Street, New York.  
 Factory, 32 to 40 Penn St., Brooklyn, E. D.

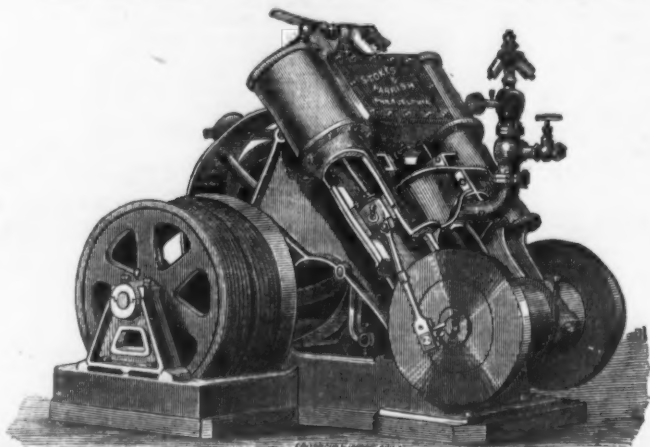


[illegible]



## ELEVATORS.

PASSENGER ELEVATORS.



FREIGHT ELEVATORS.

## INDEPENDENT STEAM ELEVATOR ENGINE.

Hydraulic Elevators to run from City Pressure.  
Condensed Air and Hydraulic Elevators operated by Steam Pump.  
Independent Steam Elevators. Belt Power Elevators.  
Portable Hoisting Machines.

All kinds of Hoisting Machinery a specialty.

STOKES &amp; PARRISH, 3001 Chestnut St., Phila.

Wiley &amp; Russell Mfg. Co.,

Greenfield, Mass.

Green River Tire

Upsetters,

Green River Drills,

Lightning Screw Plates,

Lightning Bolt Cutters,

AND

Other Labor Saving Tools.



## BEECHER &amp; PECK,

Net Price List, 1878,

OF

PECK'S

Patent Drop Presses

AND

Drop Lifters:

Number.....	0	1	2	3	3½	4	5	6	7	8	9
Price of Lifter.....	\$50	70	120	185	220	300	375	475	575	725	850
Drop, without Lifter, for Forging.....	75	100	160	190	225	275	375	475	675	1200	....
Drop, without Lifter, for Sheet Metals.....	100	125	175	250	300	350	450	625	1000	1400	....
Sheet Metal Drop and Lifter, complete.....	150	195	295	435	520	650	825	1100	1575	2125	....
Forge Drop and Lifter, complete.....	125	170	280	375	445	575	750	950	1250	1925	....
Weight of Hammer...lbs.	50	75	125	187	225	350	575	875	1250	1875	2500
Distance between Up-rights, Forge Drop, in.	6	6	8	10	11	12	16	16	16	18	....
Size of Die Space, Sheet Metal Drop, in.	6	6	8	10	11	12	16	20	24	36	....
Blows per Minute.....	80	80	75	60	60	60	60	60	60	60	60
Lift of Hammer, in.	18	18	24	30	30	30	30	30	30	30	30

TERMS CASH. Subject to Sight Draft after 30 days from date of invoice. No discount from this list.

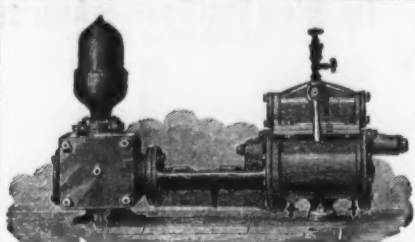
**HAMMER & CO.,**  
Branford, Conn.,  
Manufacturers of the following Patented Articles of  
**MALLEABLE IRON:**  
Hammer's Adjustable Clamps.  
Hammer's Malleable Iron Oilers.  
Hammer's Malleable Iron Hand Lamps.  
Hammer's M. I. Hanging Lamps.  
For Sale by all the principal Hardware Dealers.  
**Malleable Iron Castings**  
Of superior Quality and Hardware Specialties in Malleable Iron made to order.

## H. S. MANNING &amp; CO.,

Sole Sales Agents for THE MORSE TWIST DRILL AND MACHINE CO.'S

Manufacture of Patent Machine Relieved Nut, Hand, Blacksmith and Machine Screw Taps, Screw Plates, Tap Wrenches and Patent Relieved Pipe Taps and Pipe Reamers, also of Solid Bolt and Pipe Dies. Furnished either in V or U. S. Standard shape of threads.

111 Liberty Street, NEW YORK.

A. S. CAMERON'S  
PATENT

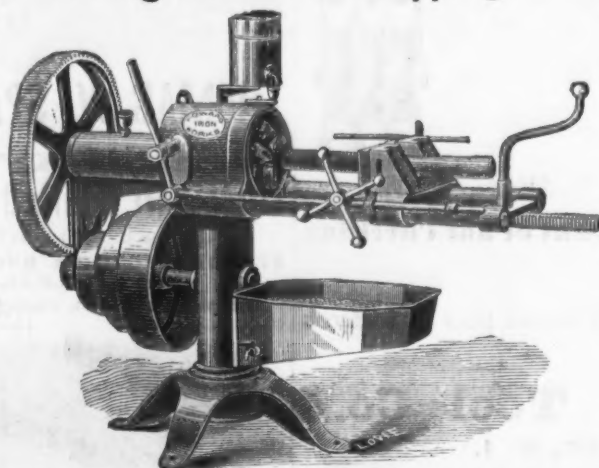
## "SPECIAL" STEAM PUMP

Is the Standard of Excellence at Home and Abroad.

For reduced price lists address A. S. CAMERON, East 23d Street, New York.

SCHLENKER'S

## Screw Cutting and Nut Tapping Machines.



No. 1 from 1/8 to 1/2 inch, price \$50.  
No. 2 from 1/4 to 3/4 inch, price \$75.  
No. 3 from 1/2 to 1 inch, price \$100.  
No. 4 from 3/4 to 1 1/2 inch, price \$150.  
No. 5 from 1 to 2 inch, price \$200.  
No. 6 from 1 1/2 to 3 inch, price \$300.  
No. 7 from 2 to 4 inch, price \$400.  
No. 8 from 3 to 6 inch, price \$600.  
No. 9 from 4 to 8 inch, price \$800.  
No. 10 from 6 to 12 inch, price \$1200.

First Premium awarded at the Centennial Exhibition.  
Send for complete (illustrated) catalogue.  
Cuts 300 1/2 inch. Bore, 2 inches each, in one hour.

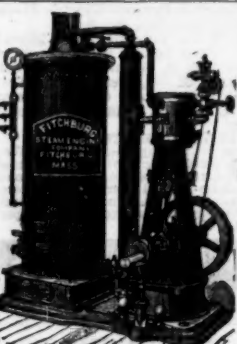
This engraving represents a No. 5 1/2 Machine, and cuts from 1/2 to 2 inches.

MANUFACTURED BY THE

HOWARD IRON WORKS, Buffalo, N. Y.

**Chas. W. Ervien & Co.,**  
IRELAND ST.  
Kensington, PHILA'DA  
BUILDERS OF  
STATIONARY & MARINE  
ENGINES, BOILERS  
SHAFTING, GEARING,  
AND  
MILL WORK  
GENERALLY.  
Special Machinery  
BUILT TO ORDER.

Vertical AND Horizontal Engines.  
Of New and Heavy Designs, from 2 to 100 H. P., on hand or in process of erection.

STEAM ENGINES,  
Vertical or Horizontal.

Combined, as in cut, 2 to 10 H. P., or on independent beds, 2 H. P. upwards to 200 H. P. Plain or with Automatic Variable Cut-off. We can refer to hundreds in use, of all sizes, giving perfect satisfaction.

Yacht Engines and Steel Boilers, Shafting, Pulleys, Hangers, &amp;c.

Send for pamphlet, stating where you saw this, to

Fitchburg Steam Engine Co.,

Fitchburg, Mass., U. S. A.

SAM'L COULTER.

A. FLAGLER.

JAS. FORSYTH.

## COULTER, FLAGLER &amp; CO.,

87 Chambers &amp; 69 Reade Sts., New York.

Hardware Manufacturers' Warehouse.

OFFICE AND WAREHOUSE OF

UNION HARDWARE CO.

RUGG MFG. CO.,

Draw Knives, Chisels, &amp;c.

DEUSE BROS.,

Bits, Corkscrews, &amp;c.

RICHARDSON BROS.,

Saws of all kinds.

BROOK'S EDGE TOOL CO.'S

Axes, Hatchets, &amp;c.

M. PRICE,

Hatchets, &amp;c.

J. &amp; W. ROTHERY,

Extra Hand Cut Files.

L. D. FROST,

Carriage Bolts, Refined and Nor-way Iron.

COWLES HARDWARE CO.,

Screwdrivers, Mining Knives &amp;c.

RIDER, WOOSTER &amp; CO.,

Anti-Friction Barn Door Hangers, &amp;c.

H. B. HAWLEY,

Shears of all kinds.

WALDEN KNIFE CO.,

Pocket Cutlery.

AMERICAN SCREWS.

N. Y. ANTI-FRICTION METAL CO.'S

Rabbit Metals.

HOWARD,

Razor Straps.

C. FORSCHNER,

Spring Balances.

P. LOWENTRAUT &amp; CO.,

Dividers, Calipers, &amp;c.

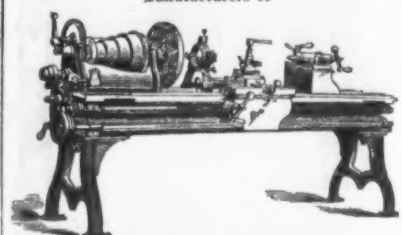
NORTH'S PATENT

## Universal Lathe Dog.

It is very strong. Holds very strong. Will not deface finished work. Holds round, square or irregular work. Always stands up square with the work and will not "skew." Is more evenly balanced than the common dog.

Send for circular.

SELDEN G. NORTH, No. 347 North 4th Street, Philadelphia, Pa.

P. BLAISDELL & CO.,  
Manufacturers of

## MACHINISTS' TOOLS,

Blaisdell's Patent Upright Drills,  
With Quick Return Motion.Engine Lathes, Planers, Boring Mills,  
Gear Cutters and Hand Lathes.

WORCESTER, MASS., U. S. A.

## Hoisting Engines

OF ANY POWER,

WITH  
Improved  
Patent Friction  
Drums.Adapted for Mines,  
Dock Building, Pile  
Driving, Quarries,  
&c.J. S. MUNDY,  
7 R. R. Ave.,  
Newark, N. J.

\$50 Screw Cutter.



H. L. Shepard's  
Celebrated  
Foot & Power  
LATHES,  
Drill Presses,  
Scroll, Circular and Band  
SAWS.  
Also Fitters of all  
kinds.  
2 horse-power engine  
and boiler complete,  
\$150; 4 horse-power  
engine and boiler com-  
plete, \$250.  
Send for circular.  
H. L. Shepard & Co.  
86, 90, 92 Elm St.  
CINCINNATI, O.

**Fairmount Machine Works,**  
Office, 2102 Wood St., PHILADELPHIA.  
Manufacturers of  
Boring, Planing, and  
Milling Machines, and  
all kinds of  
Machinery.  
With Patent Self-Feeding  
Machines,  
Power Lathes in two feet in diameter,  
Patent Friction Pulleys.

## Lester Oil Co.,

81 MAIDEN LANE, N. Y.

Exclusive manufacturers of the Renowned

Synovial Lubricating  
OILS.

The most Durable, Reliable & Eco-  
nomical Lubricant in existence;  
Applicable to every grade of machinery. Send for Cir-  
cular and Price List.

**CHARLES E. LITTLE,**  
59 Fulton St., New York.  
Agency for  
BARNES' FOOT-POWER  
MACHINERY.  
50,000 already in use! 15 dif-  
ferent machines with which  
builders, cabinet makers,  
wagon makers, and jobbers  
in miscellaneous work can  
compete, as to quality and  
price, with steam-power man-  
ufacturing; also amateurs'  
supplies, saw blades and de-  
signs. Hardware specialties.  
Send for price list.

EUREKA  
PLATFORM SPRING WAGON GEAR.

Patented Oct. 31, 1876, and May 14, 1878.  
Dealers in Carriage Goods. Manufacturers of Plat-  
form Wagons supplied on liberal terms. For prices,  
correspond with sole manufacturers.

## MINERS' CANDLES.

superior to any other Light for Mining  
Purposes. Manufactured by  
**JAMES BOYD'S SON,**  
Nos. 10 & 12 Franklin St., New York.



**Machinery, &c.**

**THE JUDSON GOVERNOR.**

It is a common method to advertise Governors without cost, unless satisfactory to the customer, and then charge High Prices for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

**Reduced Price List, FEBRUARY 1, 1877.**

For dimensions of Governor, see Illustrated Price List.



THE JUDSON PATENT

Improved Steam Governor.

No Charge for Boxing or Cartage.

JUNIUS JUDSON & SON, Rochester, N. Y.

Size, Inch.	Plain.	Bright Finish.	Extra for Speed.	Stop Valve.
1	\$16.00	\$18.00	\$1.00	....
1 1/2	18.00	20.00	1.00	....
2	23.00	26.00	2.25	6.00
2 1/2	28.00	30.00	2.50	8.00
3	31.00	35.00	2.75	10.00
3 1/2	36.00	41.00	3.45	12.00
4	40.00	45.00	3.50	14.00
4 1/2	45.00	51.00	3.75	16.00
5	50.00	57.00	4.25	20.00
5 1/2	59.00	67.00	4.50	23.00
6	69.00	78.00	5.00	28.00
6 1/2	80.00	90.00	5.50	34.00
7	90.00	101.00	6.00	40.00
7 1/2	105.00	117.00	6.50	46.00
8	120.00	133.00	7.00	54.00
8 1/2	140.00	156.00	8.00	65.00
9	175.00	192.00	9.00	79.00
10	218.00	240.00	12.00	....

**PRESSES, DROP HAMMERS, DIES, And Other Tools**

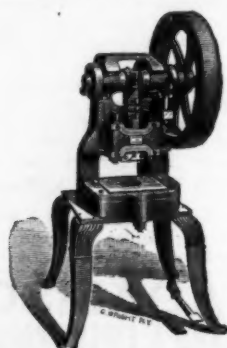
FOR THE MANUFACTURE OF ALL KINDS OF

**Sheet Metal Goods, DROP FORGINGS, &c.**

The Stiles & Parker Press Co., MIDDLETOWN, CONN.

**BLISS & WILLIAMS,**

Manufacturers of all kinds of

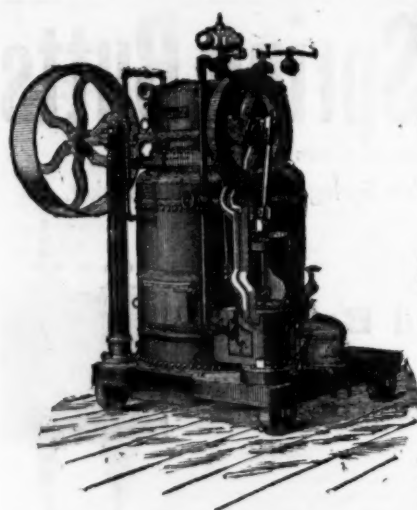


**Presses, Dies and Special Machinery**

FOR WORKING SHEET METALS, &c.

**Fruit and other Can Tools.**

167 to 173 Plymouth St., corner of Jay, Brooklyn, N. Y., and Paris Exposition, 1878.



**SHAPLEY ENGINE.**

Patented Feb. 10, 1874. Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

MANUFACTURED BY

**SHAPLEY & WELLS,**

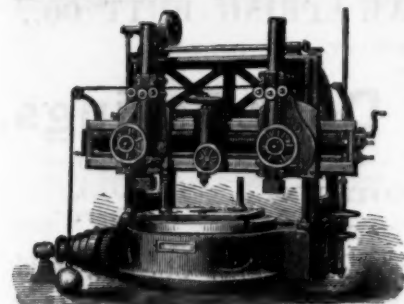
Binghamton Iron Works, Binghamton, N. Y.

MANUFACTURERS OF

Stationary Engines and Boilers.

Also Machinery for Mills of all kinds and Tanneries. Also their celebrated Bark Mills, acknowledged to be the best. Send for reduced price list circular.

**BORING AND TURNING MACHINES.**



Special Pulley Turning Machinery, Engine Lathes, Iron Planers, Universal Radial Drilling Machines, Hydrostatic Presses, Car Axle Lathes and Wheel Bore. Latest designs and patterns. Prices very reasonable.

NILES TOOL WORKS, Hamilton, Ohio.

**Machinery, &c.**

Established 1848.

**WM. SELLERS & CO.,**

600 Hamilton Street, PHILADELPHIA,

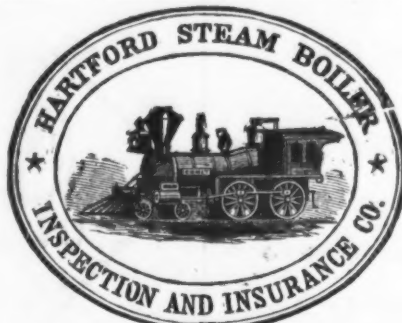
**Engineers, Iron Founders and Machinists. RAILWAY SHOP EQUIPMENTS.**

Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters Are of Improved and Patented Construction.

Railway Turning and Transfer Tables, SHAFTING & MILL GEARING, a specialty.

**Pivot Bridges.**

GIFFARD'S INJECTOR--IMPROVED, SELF-ADJUSTING.



Issues Policies of Insurance after a careful inspection of the Boilers.

COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery.

ARISING FROM,

**STEAM BOILER EXPLOSIONS.**

The Business of the Company includes all kinds of STEAM BOILERS.

Full information concerning the plan of the Company's operations can be obtained at the

COMPANY'S OFFICE, HARTFORD, CONN.,

or at any Agency.

J. M. ALLEN, Pres. W. B. FRANKLIN, Vice-Pres. J. B. PIERCE, Sec.

**Board of Directors:**

J. M. ALLEN, President. GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fire Arms Mfg. Co. LUCIUS J. HENDEE, Pres't Aetna Fire Ins. Co. FRANK W. CHENEY, Asst' Treas. Cheney Brothers Silk Manufacturing Co. CHARLES M. BEACH, of Beach & Co. DANIEL PHILLIPS, of Adams Express Co. GEO. M. HATHOLMEY, Pres't Amor. Nat'l Bank. RICHARD W. H. JARVIS, Pres't Colt's Fire Arms Manufacturing Co. THOMAS C. ENDERS, Sec'y Aetna Life Ins. Co. LEVERETT BRAINARD, of Case, Lockwood & Brainard. GEO. CROMPTON, Crompton Loom Works, Worcester. WILLIAM ADAMSON, of Isader, Adamson & Co., Philadelphia. HON. THOS. TALBOT, Ex-Governor of Mass. NEWTON CASE, Case, Lockwood & Brainard, Hartford. WILLIAM S. SLATER, Cotton Manufacturer, Providence, R. I. NELSON HOLLISTER, of State Bank, Hartford. D. R. SMITH, Pres't Springfield Fire & Marine Ins. Co.



**A. J. DAVIS & CO., Patent Friction Hoisting Engines**

For Mines, Quarries, Dock Building &c.

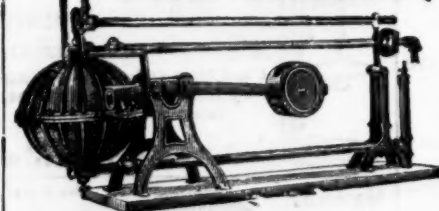
MANUFACTURERS OF

SHAPERS, DRAIN PIPE MACHINES, EAG AND SATCHEL MACHINERY, Steam Engines, Wire Drawing Machinery, &c., &c.

69 N. J. R. R. Avenue, Newark, N. J.

Correspondence solicited.

**The Albany Steam Trap.**



This Trap automatically drains the water of condensation from Heating Coils, and returns the same to the Boiler whether the Coils are above or below the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

Albany Steam Trap Company, Albany, N. Y.



**THE SWIFT MILL.**

ESTABLISHED 1845.

The annexed cut shows one of the many styles of Coffee Mills of our manufacture, especially adapted to Grocers' use and all retailers of coffee. They are highly ornamental, and workmanship of the very best. We make more than 30 styles.

**ALSO LANE'S PORTABLE COFFEE ROASTER**

Will roast 35 to 45 lbs. at once, and can be used as a stove at other times. Send for descriptive list to Manufacturers.

LANE BROS., Millbrook, N. Y.

Also sold by leading wholesale houses.

Our agents, Graham & Haines, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at Factory-prices.



**GEO. N. PIERCE & CO.,**

Buffalo, N. Y.,

Sole Manufacturer of the

**Celebrated "Gem" Coal Hod.**

Patented September 21st, 1875.

These Coal Hods are made in three styles, Japanned, Bronze Band and Galvanized, and in five sizes, viz., 15, 16, 17, 18 and 20 inch. They are all made of Refined Iron, with bottoms double seamed and the rims riveted to the body of the Hod. We also manufacture a large assortment of House Furnishing Goods. Send for illustrated catalogue and price list.

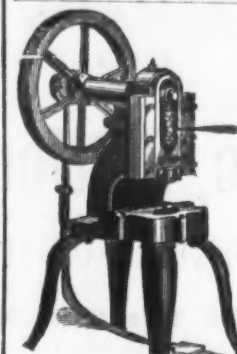
**Machinery, &c.**

**Corliss Engine Builders, With Wetherill's Improvements.**



Engineers, Machinists, Iron Founders and Boiler Makers.

ROBT. WETHERILL & CO. Chester Pa.



A. H. MERRIMAN, Patent Power PUNCHING PRESSES, West Meriden, Conn.

ESTABLISHED 1844.

**JOSEPH C. TODD, Engineer & Machinist**

Flax, Hemp, Jute, Rope, Oakum and Bagging Machinery, Steam Engines, Boilers, etc.

I also manufacture

**BAXTER'S**

New Portable Engine

of 1877, of one horse-power, complete for \$125.

2 Horse Power.....295 1200

2 1/2 Horse Power.....350 1700

3 Horse Power.....375 2100

Can be seen in operation at my store. Send for descriptive circular and price. Address

J. C. TODD,

10 Barclay St., N.Y., or Paterson, N.

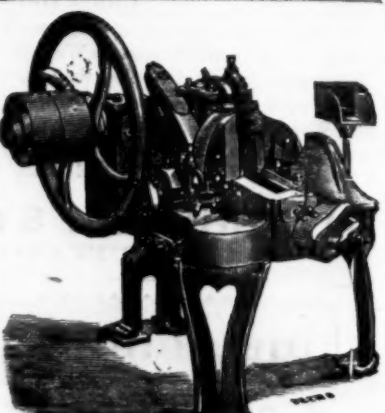


True Merit and Excellence is the Basis of all Success. THE EUREKA STEAM AND HYDRAULIC PACKING.



SYMONDS & CO., 120 Exchange Place, Phila., Sole Manufacturers.

The results of a long series of experiments made with a view of meeting all the requirements of a Perfect Packing. And we assert without reservation that it is the best article of its kind yet invented. It is made of the best materials, is elastic, pliable, and does not become hard by use, consequently is easily taken out when renewal is necessary. It has a rubber center, rectangular in form, covered with a series of braids of linen, between which is placed a lubricative compound superior to anything ever before used for the purpose, and contains nothing that can in any manner cut, flake or gum the rods, no matter how long run. It has thus far received the highest praise of every engineer who has used it, and we have received many testimonials from the proprietors of Mills, Factories, Iron Works, &c., that it is the most durable, efficient and cheapest packing they ever used. All we ask is a fair trial, knowing it will convince better than any words of ours. Orders promptly filled. Wickersham & Co., Sole Agents, 49 S. Fourth St., Philadelphia.



**PITTSBURGH MFG. CO.,**

Manufacturers of Nail and Spike Machines, Bolts, Nuts, Washers, Rivets, &c. Custom Forgings and Blacksmith Work promptly attended to. OFFICE & WORKS, Railroad St., near 28th, Pittsburgh, Pa.

**MEDAL and PREMIUM**

Awarded to

T. C. ALCOTT & SON,

Mount Holly, N. J.

For their Improved

Turbine Water Wheels



**TUBAL SMELTING WORKS,**

760 South Broad Street, PHILADELPHIA.

**PAUL S. REEVES,**  
MANUFACTURER OF**ANTI-FRICTION METALS.**

XXX Genuine.....	55c	C.....	17c
XX.....	50c	D.....	15c
X.....	45c	E.....	13c
A.....	40c	F.....	10c
B.....	35c		

Note.—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser.

**INGOT BRASS. | OLD METALS AND TUNINGS WANTED. | BRASS CASTINGS.**

ESTABLISHED 1842.

**WM. & HARVEY ROWLAND**  
PHILADELPHIA,P. O. Address:  
Frankford, Philad'a.

MANUFACTURERS OF ALL KINDS OF

**Elliptic, Platform AND C Springs,**

MADE EXCLUSIVELY FROM

**SWEDISH STOCK, OIL-TEMPERED and WARRANTED.****Swedish Tire, Too, Blister and Spring Steel.****CAST SPRING AND PLOW STEEL.**  
**CAST SHOVEL, HOE AND MACHINERY STEEL.****OXFORD TOE, SLEIGH, TIRE AND SPRING STEEL.****BESSEMER SHOVEL AND PLOW STEEL.****BESSEMER MACHINERY AND CULTIVATOR STEEL.****RE-ROLLED NORWAY SHAPES.**  
**NORWAY NAIL RODS ROLLED AND SLIT FROM SUPERIOR BRANDS.****SMITH'S**  
**PATENT MINCING KNIFE.**

This celebrated Mincing Knife has been in the market for the past ten years. It is made from the best Cast Steel, and will cut twice as fast as the ordinary knife, and will not choke up in use like the old style of Two-Bladed Knives.

It is drawn over the wire  
brace the same as a wood saw  
is strained up for use.



The thin blades are held at  
full tension by the screw which  
passes through to the handle.

The knives can be taken out and sharpened and replaced by use of the set-screw which passes through the handle.

For sale by all Wholesale Hardware and Stamped Ware Houses in the United States

**IMPROVED STEEL CASTINGS.**

Under Hainsworth's Patents.

We make Castings practically free from blow-holes, of steel which is as soft and as easily WORKED and WELDED as Wrought Iron, yet is STIFF, STRONG and DURABLE, with a TENSILE STRENGTH of not less than 65,000 lbs. to the square inch. In short, OUR CASTINGS UNITE THE QUALITIES OF STEEL AND WROUGHT IRON.

Wheels and Pinions, Dies and Hammer Heads, Engine and Machinery Castings of all descriptions, Railroad Frogs and Crossings, Plowshares, Moldboards and Landsides.

WE USE NO CAST IRON.

Send for circular.

**PITTSBURGH STEEL CASTING CO.,**  
PITTSBURGH, PA.**J. M. CARPENTER,**  
PAWTUCKET, R. I.

Manufacturer of Machinists' Hand, Machine or Nut, Blacksmiths' Taper, Gas and Steam Fitters' TAPS; also MACHINE SCREW TAPS, (American Screw Co. Standard), Steam & Gas Fitters' Stocks & Dies, Screw Plates and Dies and Solid Bolt Dies. Send for price list.

**The Reading**  
**Bolt & Nut Works.****J. H. Sternbergh,**

Reading, Pa., U. S. A.

Manufacturer of a Superior Quality of

**MACHINE BOLTS, HOT PRESSED NUTS,**

Railroad Track Bolts, Boiler and Bridge Rivets, Bolt Ends, Washers, Wood Screws, Turnbuckles, Refined Bar Iron, Etc., Etc., Etc.

**STANLEY G. FLAGG & CO.**

PHILADELPHIA, PA.

Office and Warehouse,

No. 216 &amp; 218 N. THIRD ST.

Manufacturers of

**STEEL CASTINGS.**

A Substitute for Steel and Wrought Forgings.

See Circulars sent on application.

**STEEL CASTINGS**

From 1/4 to 10,000 lbs. weight, true to pattern, sound and solid, of unequalled strength, toughness and durability. An invaluable substitute for forgings or cast iron requiring three-fold strength. Gearing of all kinds, Shoes, Dies, Hammerheads, Crossheads for Locomotives, etc. 12,000 Crank Shafts of this steel now running proved superior to wrought iron. Circulars and price lists free. Address

CHESTER STEEL CASTINGS CO.,

Evelina St., Philadelphia, Pa.

**Steel Castings,**

Light and heavy Steel Castings of superior metal, solid and homogeneous. All work guaranteed. Send for circular.

EUREKA CAST STEEL CO.,

Chester, Pa.

Office: 307 Walnut St., Phila.

**DIAMOND****LANTERN.****R. E. DIETZ,**

54 &amp; 56 Fulton St., N. Y.

Manufacturer of

**TUBULAR LANTERNS,****"Catch-em-Alive" Mouse Traps.**

Hoods Polished and Lacquered.

PAT. MAR. 31, 1874

MAL-LEABLE IRON WEDGE

NEATLY PUT UP, 1 DOZ WEDGES AND

GOOD COMIC CIRCULAR IN EACH BOX

MANUFACTURED ONLY BY

AMERICAN SLEIGH

AND CARRIAGE IRON CO.

BOSTON MASS.

Special attention paid to packing for export trade:

200 dozen sold in 1877. Price, \$4.50 per gross; one sample by mail, 10c; one each, 3 sizes, by mail, 20c; one dozen by mail, 1.00. For sale by wholesale trade throughout the United States and Canada.

**CONCORD****GENUINE****CONCORD AXLES**

Warranted the best Article in the Market.

MANUFACTURED ONLY BY

D. ARTHUR BROWN &amp; CO., Fishersville, N. H.

**DRILL PRESS.**

From New Patterns.

NEW IMPROVEMENTS

STRONG AND POWERFUL.

Cost One-third Less than

any Drill in the Market.

SEND FOR CIRCULAR.

H. BICKFORD,

CINCINNATI, O.

Machines

AND

Wheels

Guaranteed.

VOLNEY W. MASON &amp; CO.,

Manufacturers of Patent

**Friction Pulleys,**

FRICTION CLUTCHES

For connecting Shafting and Gearing.

Hoisting Machinery &amp; Elevators, Shafting,

Hangers and Gearing.

Lafayette Street, PROVIDENCE, R. I.

See cut of Elevator Hoisting Machine in issue of Aug. 15, 1878, page 40.

**PATTERNS, MODELS**

and Experimental Machinery of every description, made by

**WM. BURROWS, 90 Fulton St., N. Y.****Scranton Brass Works,****J. M. EVERHART**

Manufacturer of

**BRASS WORK,**

For Water, Gas &amp; Steam. Also

Car &amp; Wilcox Patent Cut Files.

Will cut faster, wear longer, and clog less than any file in market.

CHIEF Street, SCRANTON, PA.

**Russell, Burdsall & Ward,**

PORT CHESTER, N. Y.

Manufacturers of

**Carriage, Tire, Plow, Stove**  
**AND OTHER****BOLTS.**

Carriage Bolts made from Best Square Iron a Specialty.

**JOHN RUSSELL CUTLERY CO.,**

Green River Works,

MANUFACTURERS OF

**Table and Pocket Cutlery,****BUTCHERS', HUNTERS', PAINTERS', DRUGGISTS' & HOUSEHOLD KNIVES**

IN ALL STYLES AND VARIETIES.

**FIRST HOME MANUFACTURERS.**

New York Office,

90 Chambers Street.



Factories,

Turners Falls, Mass.

**E. M. BOYNTON,**

Manufacturer of all kinds of

First-Class Saws, Saw Frames, Cross-Cut Handles, Tools, Files, &amp;c. Also Sole Proprietor and Manufacturer of the Genuine Patent Lightning Saw.

80 BECKMAN STREET, NEW YORK.

**TRIAL OF THE IMPROVED LIGHTNING SAW.**

The Emperor Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall, at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. BOYNTON, of New York, they witnessed a trial of the New Lightning Saw, patented March 26, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corliss, Morell, Lynch, and other members of the commission witnessed the trial and timed the cutting. The Emperor remarked, That was fast, very fast cutting. Last evening the Emperor made another examination of the saw. —Philadelphia Press, June 30.

"BOYNTON'S SAWS were effectually tested before the judges at the Philadelphia Fair, July 6th and 7th. An ash log, eleven inches in diameter, was sawed off, with a four-and-a-half-foot lightning cross-cut, by two men, in precisely six seconds as timed by the chairman of the Centennial Judges of Class Fifteen. The speed is unprecedented, and would cut a cord of wood in four minutes. The representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries, were present, and expressed their high appreciation."

Received Medal and Highest Award of Centennial World's Fair, 1876. \$1000 Challenge was prominently displayed for six months, and the numerous saw manufacturers of the world dared not accept it, or test in a competition so hopeless.

**BAEDER, ADAMSON & CO.,**  
Manufacturers of SAND & EMERY PAPER & EMERY CLOTH.

(Also, in Rolls for machine work.)

Ground Emery, Corundum & Flint, Glue & Curled Hair, Hair Felt, & Felt-  
ing for Covering Boilers, Pipes, &c., Cow Hide Whips  
PHILADELPHIA, 730 Market St., BOSTON, 143 Milk St.  
NEW YORK, 67 Beekman St., CHICAGO, 182 Lake St.

**Bemis & Call Hardware & Tool Co.**

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.

For Circulars and Price List, address

**BEMIS & CALL HARDWARE & TOOL CO. Springfield Mass.****Am. Spiral Spring Butts**

WARRANTED TO BE THE

Most Powerful and Most Durable Spring Hinges in the Market.

**New and Beautiful**  
**Designs.**

The same Butts can be used for either right or left hand doors. Send for reduced price list March 1, 1877.

MANUFACTURED BY

**THE AMERICAN SPIRAL SPRING BUTT CO.,**

No. 89 BECKMAN STREET, NEW YORK.

**Rod and Coil Door Springs,**

GEM,

STAR,

TORREY,

GRAY'S

MANUFACTURED BY

**AN WAGONER & WILLIAMS, 82 Beekman St., New York.**